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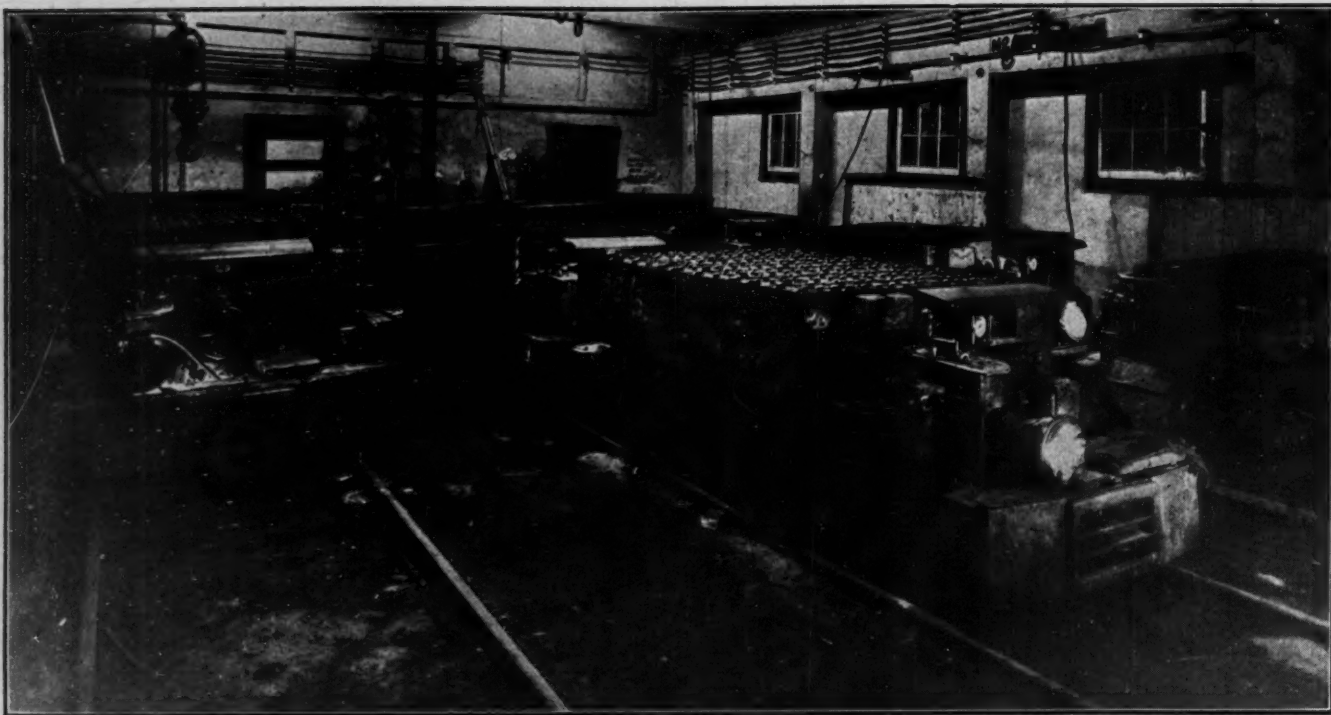
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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 29

New York, January 7, 1926

Number 1

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Managing Editor.
FRANK H. KNEELAND
J. H. EDWARDS
Associate Editors

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A. F. BROSKY, Pittsburgh
LOUIS C. MCCARTHY
Assistant Editors
PAUL WOOTON
Washington Correspondent

With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
R. DAWSON HALL, Engineering Editor

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"Cooling with Coal"

THE CONSTANT search for new consuming outlets for coal turns up the entirely workable idea of cooling theaters, business offices, factories and even homes in hot weather by refrigerating plants run by electricity that is generated by coal. Most people will be surprised at the rapid advance in this line made recently. R. Dawson Hall, engineering editor of *Coal Age*, tells an interesting story about it in next week's issue.

MOVING PICTURE HOUSES are leading the movement at the present moment. Few such theaters of consequence are built these days without a refrigeration plant run in connection with the ventilation system. The initial cost of installation for a theater seating 4,000 or 5,000 people may run from \$60,000 to \$100,000 but operating charges usually are low—the daily average is estimated at 1.5c. per seat—and both are absorbed usually within two years by increased summer patronage. One theater in Chicago has the operating cost down to less than one cent per seat.

THE MOVEMENT is not particularly new. The offices of a New York banking house were "cooled with coal" as long ago as 1907 and various restaurants and one or two hotels in the country followed suit. Today more projects are under way. The thing is just beginning to prove its worth. What the future will bring forth of course remains to be seen, but engineers of vision look forward to a day when we will no more think of enduring the indoor stifling heat of summer than we now would tolerate unheated houses in winter. As this movement advances, coal consumption increases. The mining man, therefore, is deeply interested.



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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. Dawson Hall
Engineering Editor

Volume 29

NEW YORK, JANUARY 7, 1926

Number 1

Three Sides to the Coal Labor Dispute

THE NEWSPAPERS in describing the strike agreement negotiations in New York, referred to "the miners' most insistent demand, the check-off." This illustrates an inexactness of thought and consequent phraseology which should be noted. The check-off is not the insistent demand of the miners: it is the insistent demand of the organized miners' union—that is to say, of the leaders thereof. No miner ever desired to make a national issue to force his employer to abstract his union dues from his pay envelope before handing it over to him, on the plea that he was too indifferent or weak or too unfavorable to the union, to pay his dues, once he got the money in his jeans. The demand for the check-off is not the demand of the miner against the operator, but the demand of the union officials against the miner. It is an indictment of the miner as unintelligent and incapable of handling his own funds; and is a survival of the importation of cheap foreign labor in the coal industry, of a type that needed to be brow beaten by union leaders and employers alike, and forcibly aligned into a union they did not understand, and which they did not have the intelligence and independence to support, or to disapprove.

Indeed, there has been three parties, not two, to the whole anthracite strike—the operators, the union, and the miners. The strike organizers can have had no illusions that they were to bring about a net financial gain to the miners any more than to the operators; they must have known that the money lost to both sides would never be recovered in any readjustment. What they hoped for was a gain to the union as the price paid by the irretrievable economic loss to the industry, sustained by both the real laboring factors in the strategy—the operating miner and the working miner.

Leisure More Fatal Than Labor

IN THE January issue of the *Employees' Magazine*, of the Union Pacific Coal Co., it is stated that in the year just past there were four fatal accidents in the company's Wyoming mines and one in its mine at Tono, Wash. In contrast with this record six employees of the Wyoming mines of the company were killed in automobile accidents, one employee was murdered and one committed suicide. Twice as many met their deaths by accident, therefore, in their non-working time as lost their lives in the mine. Furthermore, in the "wide open spaces" of southern Wyoming, where, by the way, the roads, though mostly of dirt, are excellent, there is less excuse for accident than in crowded cities. Apparently bootleg liquor was a cause of some, at least, of these fatalities.

There were thirteen fatalities in the company's mines in 1921, eight in 1922, sixteen in 1923, nine in 1924, and only five in 1925. Thus the automobile did its part

to compensate for the increased safety of the Union Pacific Coal Co.'s mines.

But the company desires a further measure of safety. "Candor," says E. C. McAuliffe, the president of the company, "compels the statement that the death of at least two men could have been foreseen and avoided. They both died because of our failure as managers to see that the 30-in. track clearance recently adopted in our Book of Standards was maintained."

Speaking about responsibility for accidents, he says that he "has a deep and abiding belief that less than ten per cent of the mine fatalities which occur can be charged wholly to the victim." There is much to be said in regard to this contributory negligence of the employer. The employee is sometimes only partly to blame, though that part may be 90 per cent of the whole. The rest of the fault is that of the employer who has not made it sufficiently difficult for the employee to injure himself by carelessness.

The accidents due to lack of clearance seem to be of that character. The two from falls of roof, according to Mr. McAuliffe, were not, and the one from failure to wait twenty minutes on a shot can only be placed on the management by holding that the men were insufficiently instructed.

In the intermingling causes that result in an accident the operator does well to beware lest he find he has a part, however small. It often takes a half dozen contributing causes to make an accident.

We Extend Our Service

THE WIDER AND CLOSER a publishing house can make its contacts with the industries it serves, the more valuable that service becomes. This was an actuating influence moving the McGraw-Hill Co., Inc. to purchase the Keystone annual catalogs which have been standard reference and data books in the coal and metal mining industries for years. Full announcement of this purchase is made in the news pages at the end of this issue.

Coal mining men on the one hand and equipment manufacturers on the other who read *Coal Age* are well aware of their own community of interest. Each one profits most who makes best use of the opportunities the other offers. Educational work correlating the efforts of both has always been considered by this magazine to be an important part of its educational task. Therefore it is eminently fitting that the publishers of *Coal Age* should extend these correlating activities, issuing not only the magazine but also the most complete reference books of the industry.

CONTROL OF RAILROADS SUGGESTS and, in a sense, demands control of motor trucks, buses and similar carriers. The regulation of coal makes reasonable the control of oil, coke and other substitutes. Thus from one stepping stone to another we advance to socialism.

The Markle Plan

IF THE TEST of an acceptable solution of the anthracite labor deadlock is to be the public interest, the program proposed by Alvan Markle, chairman of the joint wage conference, at New York last week merits earnest and sympathetic consideration. In brief, that program would encompass: (1) A truce providing for an immediate resumption of mining at the 1923-25 scale while the machinery for permanent peace was being geared for action; (2) a long-term agreement, with flexible wages, and a bar against strikes or lock-outs; and, (3) impartial determination of the economic facts upon which wages should be based. It would preserve to both employer and employee the fullest opportunity for self-determination of all issues and invoke outside aid only after the resources of conciliation and direct negotiation had been exhausted.

An early resumption of mining—if it carries with it the assurance of permanent peace—is clearly in the public interest. A long-term agreement meets the expressed desires of both operators and miners. Where they differ is on the question of rigid wage scales. With neither side disposed to respect the factual statements of the other, impartial determination of the basic data seems the proper course. Indeed, if such determination did nothing more than dissipate the mutual suspicion entertained by miners and operators and the public distrust of both sides, it would be well worth the cost. That an agreement reached without the intervention of an outside agency is preferable to the parties directly concerned and promotes harmonious labor relationships is too obvious for comment.

But four months of inactivity have demonstrated that such an agreement within reasonable time limits is not always possible. The Markle program and every other plan suggested since the first break in negotiations last summer recognize this. In meeting this contingency, however, we fear that a laudable spirit of compromise has led the author of the Markle plan to concede too much to the sensitiveness of the union spokesmen. Mr. Markle would create a fact-finding commission of nine with membership equally divided between the miners, the operators and the public. Upon the representatives of the last-named group would devolve the task of initiating a report and recommendations, but this group would vote only in the event that the representatives of the operators and the miners failed to agree. In that event, the public representatives would vote on disputed points with the other six and a majority vote of the nine would decide the issues.

Mr. Markle has said to the miners that this is not arbitration, but an extension of the plan of operation of the Anthracite Board of Conciliation, with three umpires instead of one. It is easy to understand the chairman's reluctance to damn his project with a description so hateful to the miners. Nevertheless, we think that Mr. Lewis and his associates are correct when they describe it as arbitration under another name. The plan loses none of its force by boldly stating what it is. Sooner or later the union will have to revert to its earlier position when it was a staunch advocate of arbitration. We might just as well face the facts now as later. Sugar-coating the pill will deceive no one: neither will it speed acceptance.

There is, however, a real objection to the plan as proposed. The *modus operandi* outlined promises to be more provocative of dissension than of harmony. In

the first instance, the public representatives submit a report to their fellow-commissioners. If it could be assumed that this report would be approved by both operators and miners, all would be well. The reasonable assumption, alas, points to a contrary conclusion. In the end, the deciding vote rests with the public group, but that vote is cast only after opinion of the contending parties has become frozen. Bitterness, doubt and suspicion are encouraged and the defeated side is more convinced of the justice of its cause than if it had never gone on formal record.

Fortunately this defect is not irremediable. Since the public group must control, why not divorce it entirely from the preliminary negotiations? Why commit it in advance to views or conclusions it may wish to modify in the light of further discussion or argument? Let it appoint the investigating corps if miners and operators cannot agree upon the agency or agencies, and then retire from the scene until such time as operators' and miners' representatives admit their inability to reach an agreement. Then let the operators and miners submit statements showing the facts and the recommendations upon which they agree, with supporting documents, and the points in dispute. This done, exclude the representatives of both sides from participation in the deliberations of the public group and let the public group alone sit in judgment and decide the questions by a majority vote of its own membership.

In this way, the public group would have the benefit of all the technical knowledge and advice of both operators and miners. But, acting independently in reaching its decision, its conclusions would be more readily accepted by both sides and would carry more weight with the public at large. After all, when we reach the arbitration stage, we are approaching something so akin to a judicial determination that in certain fields resort to arbitration precludes an appeal to the courts. Representatives of the miners and the operators have as much right to be members of the arbitration board as plaintiff and defendant would have to mount the bench and vote with the judge in a court of law.

Coal Mines Help to Build Highways

LARGE COAL LAND holdings increase the expenses of the holders and the cost of coal, but they help to pay the taxes for maintaining roads and schools. Without such help the public roads would exhibit slow improvement. The public should remember that such expenses, figured either as liquid charges or as a fixed value in the land held, while adding first or last to the cost of coal, bring the motorist speedy transportation. But here, again, the mine owner is sometimes condemned for charging back what he has been obliged to pay. But surely the public would not have him assessed for the building of roads in parts distant from his towns and tipples and yet prevent him from recovering the expenditure, as a charge on coal, in land sales or in royalties.

PITILESS PUBLICITY—The Mine Workers are asking that inquiries be made into the financial affairs of the coal companies. As W. W. Inglis has pointed out, we already have the Coal Commission's thick report. Company books were ransacked to obtain this data. The important omission is facts about the check-off. Will the union furnish this interesting information?

Anthracite Company Takes Another Big Step Toward True Modernization

Much Less Fuel Is Needed to Supply Electrical Energy to Motors than Steam for Direct Users—Additions to Nanticoke Plant Make Glen Alden Capacity 50,000 Kva.

By C. R. Seem

Electrical Engineer, Glen Alden Coal Co.,
Scranton, Pa.

ALTHOUGH the Glen Alden Coal Co., generates all its own power, it burned under its boilers in 1924 for all steam raising purposes only 776,548 tons of anthracite, or a quantity equal to but 7.8 per cent of its tonnage shipped to market.

The company is highly electrified because records comparing the relative efficiency of steam and electric drives have impelled the use of electricity. The quantity of steam required to generate electrical energy for motors is, in most instances, less than one third that necessary to drive steam-operated equipment.

The fuel used in the company's electric power plants and auxiliary plants at several collieries was of the lowest grade. The total tonnage consumed by the company, besides generating electrical energy, raised steam to supply direct power applications not yet electrified and heated the collieries.

About 31 per cent of the coal was barley No. 1 and 69 per cent was barley No. 2. Of this tonnage 318,873 tons, or 3.2 per cent of the quantity sold was used to generate electrical energy and 457,675 tons to raise steam for all other purposes. Only barley No. 2 was used in the electric plants.

From this fuel energy was obtained for a connected electric motor load of 140,000 hp., a steam power load of 38,500 i.hp. for steam engines, steam pumps, etc., and an additional load for heating purposes.

Estimated from steam-flow meter records obtained on certain machines, indicator card tests made on others and computed foot-pounds of work done by still others, such as hoisting and pumping units, 185,000,000 hp.-hr. of work was done at the shafts of the drivers. The collection of these data revealed a startling fact regarding the comparative efficiency of steam and electric drives. It was found that for every horsepower-

hour of work done at the shaft of a steam engine an average of 76 lb. of steam was required at the boiler house; whereas, for the same work done by an electric motor only a 29-lb. average was necessary.

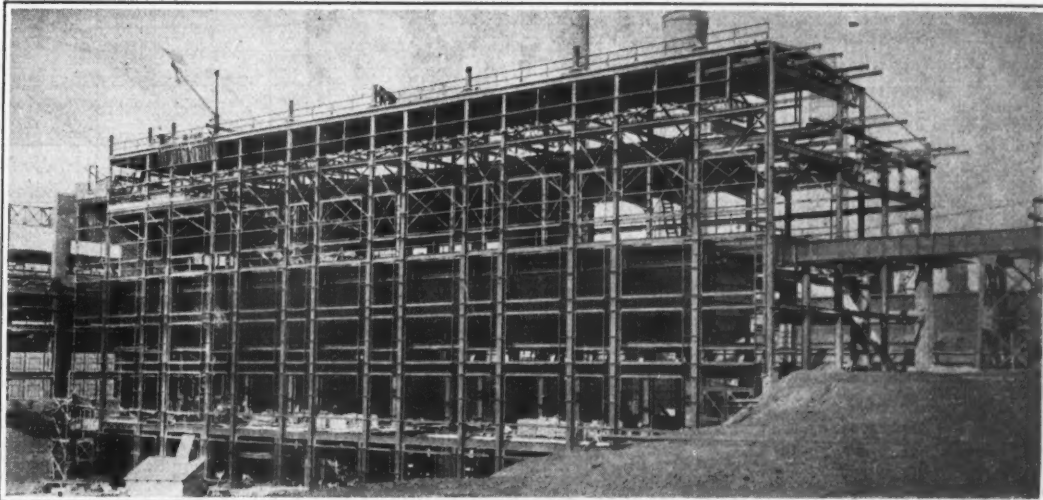
Examination of the flow charts on many large steam engines shows quite clearly a reason for this important difference in steam requirements. These records revealed the fact that stationary mine steam engines even though operated only 8 hr. a day, use as much steam in the other 16 hr. as in the eight while running. The reason for this is that high line losses due to condensation and leaks in joints, traps, throttles, etc., go on continuously and hardly can be avoided even on well kept steam systems. It is difficult to keep every engine and steam line leakless. Also, it is often necessary to leave the throttle of a steam engine slightly open to keep the engine warm and free from condensate. Fortunately, such leaks cannot exist on electric power lines and motors.

Furthermore, the average steam hoisting engine, when in operation, uses about 50 lb. of steam per horsepower-hour, and most pumps use more than 75 lb. These figures are based upon records taken at the machine and disregard the line losses which are always considerable. As compared with this, a modern turbo-electric plant, such as is reasonably possible for a mining operation, produces a horsepower-hour of energy for each 10 to 15 lb. of steam consumed. These data alone show a difference in steam consumption well worth considering. Obviously, when the line losses of a steam-operated mine are compared with the distribution losses of an electrified plant this difference in steam consumption becomes much greater.

To get a more accurate idea of the savings effected by electrification, other factors also must be considered.

Big Plant Under Construction

This addition to the Nanticoke power plant, which is already the largest coal company-owned electric generating station, will accommodate fourteen boilers for about 50,000 kva. in generator capacity. Five boilers are now being installed for a new 15,000-kva. turbo-generator.





A Pioneer Electric Plant in the Upper Anthracite Field

The problem of supplying cooling water at the Hampton plant was solved by using mine water. Now the plant and operations of the company have grown to the point where additional generating capacity can be more advantageously placed at Nanticoke.

The ordinary mine boiler plant is not handled by skilled operators or provided with modern steam-raising equipment. Furthermore, it is merely another detail in the many duties incumbent upon a mine superintendent or foreman and he cannot be expected to give it expert attention. Isolated mine boiler plants are rarely, if ever, equipped to burn the small-size fuel which can be used in modernized plants, therefore it will be found that they use large quantities of fuel which could be sold. Often they use coal which is much larger than is generally believed. In emergencies—occasions which arise and persist for long periods in winter—it is the general practice to take fuel that would otherwise go to market and use it at the mines.

Power plant improvements which are continually going on have already made it possible for the economic utilization of fuel which is too fine to be shipped to market by the ordinary methods now used. In fact, it has been proved both practical and successful to generate steam from pulverized anthracite.

Therefore, for the double purpose of releasing for market all possible saleable coal and to eliminate the large power losses incident to isolated boiler plants, the Glen Alden Coal Co. for years has carried on a plan of electrification which is still unfinished.

At present the company has four turbine plants, briefly described as follows:

The oldest plant is a 11,000-kw. station located at Hampton. This plant has reached its economic limit. Mine water is used for cooling purposes. The total available flow is barely enough. Physically the plant cannot be redesigned or enlarged without expense that is now unwarranted.

At the Woodward mine near Wilkes-Barre a 1,000-kw. low-pressure turbine is operated. This machine uses exhaust steam from the various hoists and fans at this colliery.

At Storrs, in the Providence section of Scranton, a 2,500-kva. machine was installed a few years ago to use the surplus steam available from a good boiler plant which had formerly supplied the breaker and mine pumps with steam before the colliery was electrified.

The fourth electric plant is near Nanticoke, Pa. This station is probably the largest and most modern industrial plant wholly devoted to supplying an industrial load. The first machines installed there and put in service in 1902, were three 500-kw. vertical turbines supplied by three 303-hp., hand-fired boilers. The steam pressure was 150 lb. gage, 150 to 200 deg. superheat.

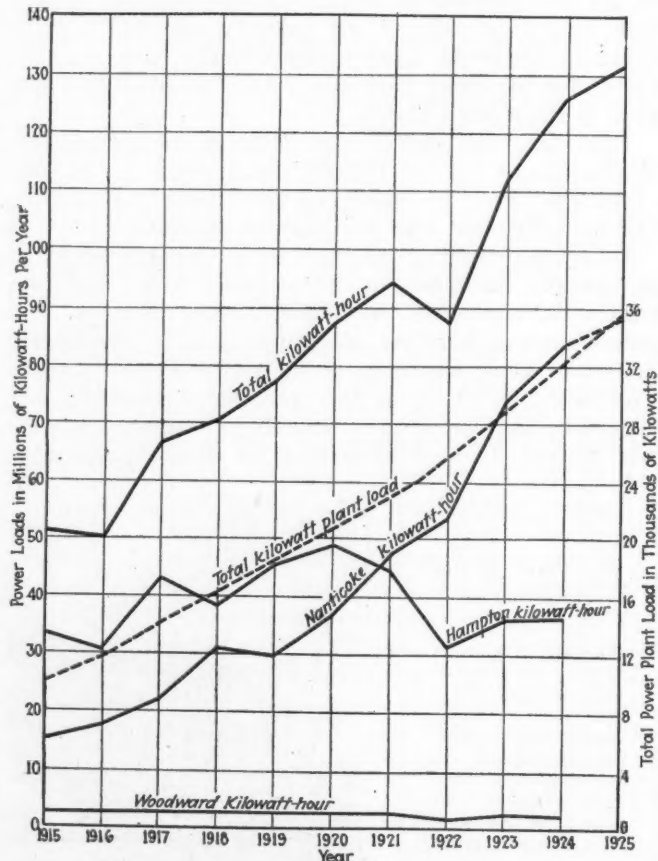
Barley No. 1 coal was burned. The water rate of these machines was 27 lb. per kilowatt-hour.

By 1905 five of these machines had been installed. In 1911 it was decided to install two 5,000-kva. turbo-alternators, an up-to-date turbine room including switching compartments and a new boiler plant of twenty 303-hp. boilers. The last of these boilers was installed in 1918. In 1916 all the hand-fired boilers then in service were changed to stoker-fired units, the stack height was increased from 100 ft. to 125 ft. and the plant redesigned to accommodate these changes.

In 1918 a 10,000-kva., 13,000-volt, 150-lb. gage, 150-deg. superheat machine was installed in addition to the two 5,000-kva. units. No additional boilers were put in then because it was impracticable to enlarge the boiler plant.

In 1921 the five 500-kw. vertical turbo-generators were scrapped. At that time sufficient information was available to estimate the continued demand for electrical energy. By studying the growth curve reproduced with this article it could be seen that by 1926 the company would be in urgent need of another large generator.

After the 10,000-kva. turbine was installed in 1918 it was felt that any future additions would have to be made with a view toward taking advantage of everything that well established practices dictated. However, inasmuch as the company did not care to do any pioneering work in this direction, it decided to use 275 lb. steam pressure at 150 deg. superheat with the next unit. Consequently, about a year ago, a 15,000-kva. turbo-generator with two points of stage bleeding was purchased to operate under these conditions. To sup-



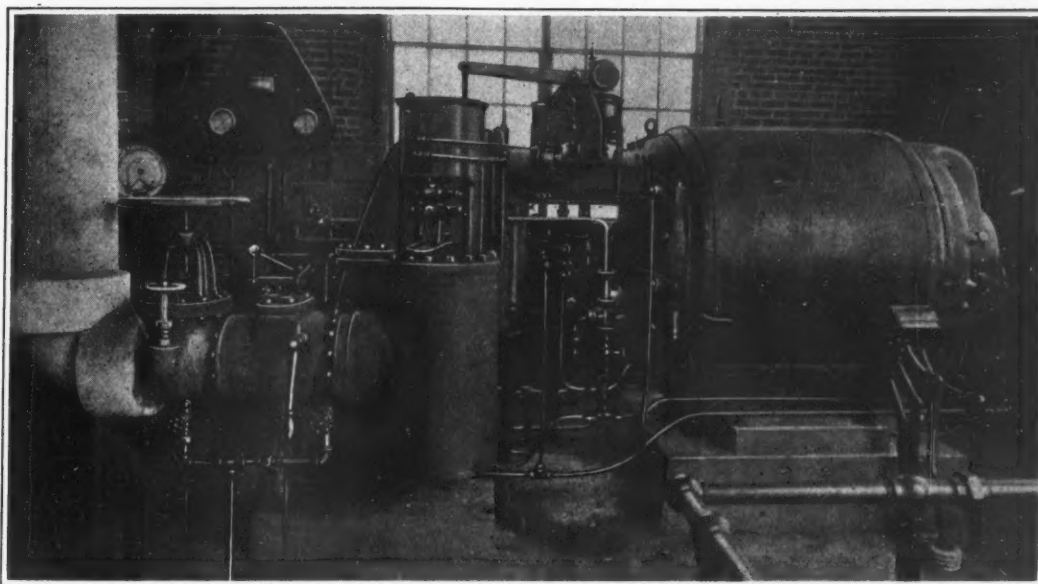
Load Curves Show Rapid Progress of Electrification

Year by year the load curve of the Nanticoke plant has shown a steady increase; so also has the total load curve of the company. During the past decade the yearly load has increased 80,000,000 kw.-hr., at an average rate of 8,000,000 kw.-hr. per year. In this same period the total kilowatt demand has nearly reached 36,000 kw.

Balances Feed Water

Temperature

The governor of this 500-kva. house turbine is influenced by the load on the large turbines in such a manner that sufficient exhaust is always available to maintain the boiler-feed water at 210 deg.



ply steam for this turbine five 6,675 sq ft., Stirling boilers equipped with 3,237 sq.ft. of economizer surface were purchased.

To house this equipment an addition is being built to the power house suitable for fourteen boilers although only five will be installed now for the new turbine. A new tunnel 44 ft. below ground level has been built to the river to carry intake and discharge pipes to insure full water supply at minimum river elevations. The intake water enters through a screen house in which are located three motor-driven traveling chain screens of the vertical type. Trash is removed by high-pressure nozzles squirting warm water through the screen, thus in cold weather but little difficulty will be experienced. This refuse material is then carried away in troughs. The condensing water flows into a sump and provision is made for pumping into the old section of the plant in emergencies as well as to the new 15,000-kva. machine and for two other turbines which may be installed later.

For the present equipment in the plant the feed water is heated in an open-type heater, sufficient exhaust being taken from various auxiliaries to raise the temperature of the water to 200 deg. To make up the difference between 200 and 210 deg. and to take care of variations in demand, a non-condensing, 500-kw. house turbine is floated on the house bus. Its governor is connected to a relay, which in turn is connected to a thermocouple in the stack exhaust of the heater. In this manner the house turbine supplies just enough steam to raise the feed water to 210 deg.

Coal handling at this plant is quite simple. All fuel is shipped from the various collieries over the D., L. & W. R.R. The boiler house is so situated that the supply track enters the plant over the bunkers on a grade of 1½ per cent. In warm weather cars are run directly over the bunkers and emptied into the hoppers through cast-iron gratings which prevent not only foreign material entering the hoppers but serve as a safeguard for the men.

In winter the coal is frozen when it arrives and the cars must stand over the hoppers awhile before they are unloaded. As the cars are in an upper section of the boiler plant this makes an ideal thawing house. The heat of the boilers combined with live steam, which is used under ordinary winter conditions, is sufficient to

loosen the coal. In severe weather it is necessary to use auxiliary thawing lines on the cars before they are placed over the hoppers. Some of the cars are often so badly frozen that 3 to 4 hr. of heating are necessary to loosen the coal.

The new plant will accommodate five cars at one time as does the old plant. The bunkers will hold five tons per foot of length or a total of 1,000 tons. The company expects to burn 340 tons in 24 hr., but the ultimate consumption in the new plant alone will be between 800 and 1,000 tons per day. All cars are moved by means of a locomotive, but in emergencies a motor-driven winch can pull the cars in or out of the plant.

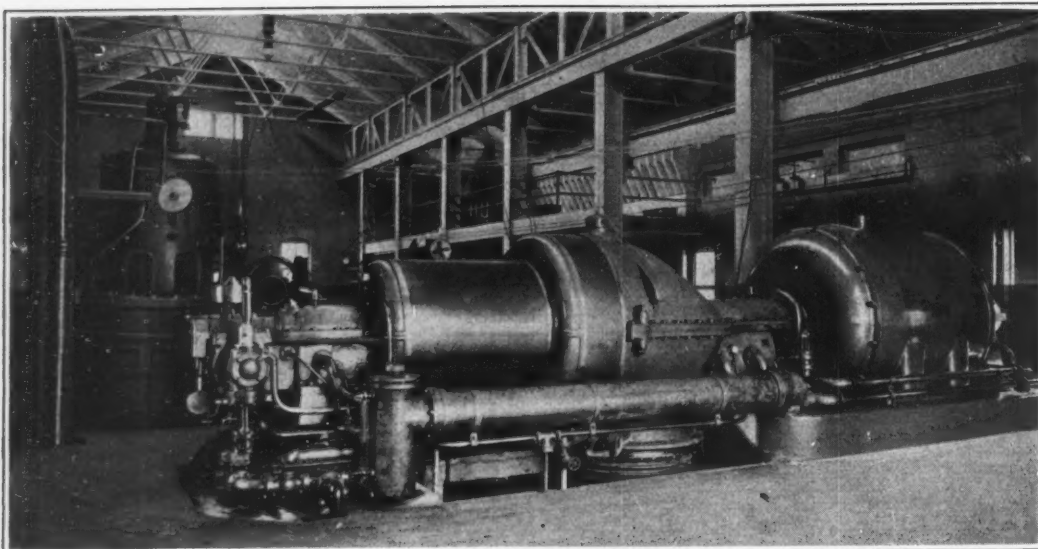
There will be two somewhat similar methods of ash disposal at this plant. In the old plant the boilers are set at ground level and the ash pockets are of sufficient capacity to hold the ash produced in about 6 hr. of normal run. This, however, is not a serious factor for the gates on the ash hoppers open directly into a flushing trough, which empties into a deep concrete tank outside the plant.

WATER AIDS IN MOVING ASHES

In these hoppers spray water continuously cools the ash so as to keep down the dust and quench all hot material that may come over the ends of the stokers. One man empties the hoppers for the twenty boilers. During the process of emptying the hoppers, high-pressure water is used to assist the movement of ashes into the trough. This is necessary as there is very little pitch to the bottom of the hoppers. After leaving the hoppers the ashes travel to the center of the plant through the flushing trough and, turning at right angles, flow outside into the main ash tank. This tank has sufficient storage for 24 hr. The water level is held constant by means of an overflow pipe.

The ash itself is taken out of the tank with a 1½-yd. grab bucket by means of a revolving, stiff-leg derrick. It is dumped into 3-yd., side-dumping, 36-in. gage cars and hauled to the ash bank by means of a 7-ton electric locomotive.

In the new plant the boilers will be set 15 ft. from the ground. Underneath each boiler double-gate, oil-operated hoppers are already installed. The locomotive and ash cars will be run directly beneath the ash gates and the cooled ashes will be dumped into the cars and



Old Types Are Replaced

The Glen Alden Coal Co. generated its own power when vertical turbines were the most modern units of the day. On the left-hand side of the picture stands one of the old vertical turbo-generators originally installed at the Hampton power house. Always keeping pace with new developments, the company is now installing a 15,000-kva. unit which has two stages of bleeding.

removed to the bank. Under the tracks and leading to the main ashpit of the old plant, is a cast-iron lined, concrete, flushing trough. Over this and under the tracks is a cast-iron grating. All of the spillage and splash from the cars falls into the trough and is washed to the main pit. Likewise, if for any reason the ash cannot be dumped into the cars it will be possible to drop it directly on the grating from which it will fall into the sloping sides of the trough and then be washed to the main pit.

The gates on these hoppers are water-tight, measure 5x4 ft. and are operated by oil cylinders. Oil pressures are maintained by a special pump and a duplicate unit is provided for emergencies. The use of oil under high pressure insures a positive movement of the gate and while the gates move quickly there is no slamming or rebound. With the use of oil there is no fear of winter freezing and higher pressures can be used more successfully than with water systems. This is important as the doors to the ash tunnel must be open to permit the locomotive to place the cars.

The company expects this system to work cheaply and efficiently. One man is employed for dumping the hoppers in both plants. One man handles the ash bucket derrick and one man the locomotive and ash cars. On the ash bank two men are required to dump cars; they also move track and keep things in operation there. One extra man will be employed on the eleven o'clock shift to empty the pockets and to render any necessary help. This makes a total of six ash men for the whole boiler plant which will have a total capacity of about 11,000 hp. All ash will be handled during the day shift.

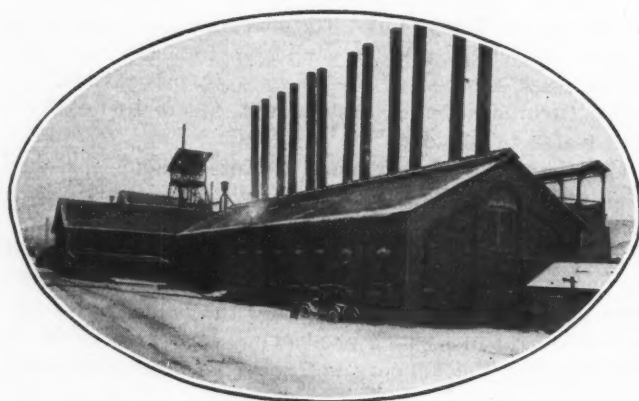
Electricity is generated at four different voltages. The larger and newer turbines, the 15,000 and 10,000-kva. units, generate energy at 13,200-volt pressure; the two old 5,000-kva. machines generate at 4,150 volts. The longer and heavier feeders go directly from the 13,200-volt bus to their various transformers or directly to the collieries. For some of the collieries, particularly those which are situated near the generating plant, the distribution lines lead directly from the 4,150-volt machine bus. The plant originally generated all energy at 4,150 volts pressure. The 500-kva. house turbine generates 440-volt energy. This goes directly into the 440-volt house buses. Direct current for excitation, also for charging storage batteries and emergency lighting service is made at 125 volts.

The 4,150-volt bus and the 13,200-volt bus are con-

nected together through three 2,500-kva. transformers separated by means of disconnecting switches and an oil circuit breaker.

To supply current for the power house system there are two 440-volt buses, one being supplied through a transformer bank connected to the 13,200-volt bus and the other by a similar bank connected to the 4,150-volt bus. The house turbine can feed directly into either of these 440-volt buses, which may also be tied together by operation of interconnecting switches. This gives a flexible and reliable means of supplying current to the plant auxiliaries.

The circuit breakers for the 13,200-volt machines are being located close to the machines just below the main floor. Leads are run from these switches to the buses in the switch gallery; feeder switches are also located nearby. Plans are being made to rearrange the buses so that in case of accident or inspection a regular service switch can be disconnected and worked upon. Power for the operation of these switches and the main board will be supplied by a storage battery. In case of failure of the battery circuit, emergency service can be obtained from the excitation system. The control board is located on the main turbine room floor and is handled by the engineer in charge of this section of the plant.



Power for Two Mines Generated Here

This plant supplies the larger part of the energy consumed by Jerome Mines Nos. 1 and 2 operated by the Hillman Coal & Coke Co. at Jerome, Pa. The capacity of the plant, which burns crushed picking-table refuse from the C-Prime seam, is 800 kw. In addition, a normal load of 600 kw. of purchased power at 2,200 volts is conducted to underground substations where it is converted into direct current. When this plant was built in 1904 a plentiful supply of stone was available for its construction.

Poor Drainage Ruins Concrete Shaft Linings*

Survey in Pennsylvania Shows 30 of 106 Failed Though Cement Was Good—Freezing and Thawing of Leakage Destroy Walls—Remedies Are Suggested

By Newell G. Alford
Pittsburgh, Pa.

THE NEED for adequate drainage behind concrete linings of coal mine shafts seems apparent from a survey of installations in western and central Pennsylvania. Thirty of the 106 concrete shaft linings studied were distinct failures and in every case insufficient drainage was the outstanding difficulty. The results of the survey suggest improvements in concrete lining practice.

Twenty-two years have now elapsed since the first mine shaft in America to be lined throughout with concrete was completed at Gary, W. Va., in 1903. The practice of thus lining shafts rapidly spread until by 1915 it had become practically universal not only for coal mines but iron mines as well.

In 1921 failure of two concrete linings at western Pennsylvania mines led to the survey covered in this paper. This study was confined to the central and western districts with no organized effort to extend it beyond the state boundary. No decided lining failures have yet been reported outside of this region.

In all but six cases of the 30 failures studied these linings gave trouble within two years after installation. No fault can be found with the cement because good grades were used in all instances. In 17 of the failures the aggregates were approved sand and gravel; in the remainder they were either gravel and crushed sandstone, gravel and crushed limestone and sandrock, slag and sand, or simply crushed sandstone.

In nine cases the workmanship was reported as being either "fair" or "bad." These terms, however, are so relative in their significance that they mean little. If the work was not of the best the blame should, doubtless, be shared by the coal company and should not be borne entirely by the contractor. Lining a shaft involves the chuting of the wet concrete into the forms through conveyor pipes of either rigid or flexible design with a consequent doubt as to whether the cement is thoroughly mixed with the other ingredients when the material finally comes to rest. Not infrequently disproportionate quantities of the cement are floated to the surface of the batch. This uncertainty with numerous others can easily result in controversy that should be anticipated by properly drawn specifications.

In all of the failures, lack of sufficient drainage was a principal cause. Leakage was estimated at anywhere from a mere seepage to 50 gal. per minute. Severe temperature changes with alternate freezing and thawing of the water that penetrated the concrete destroyed the surface of the lining. After the face had scaled off, a disintegrated mass was invariably found beneath.

Undoubtedly the greatest problem involved in successfully lining a shaft is the determination of the drainage required. One or two holes were drilled outside a few

of the linings that failed without carrying away the water. These linings, however, were not supplied either with bleeder pipes or water rings, which experience shows are essential to the successful handling of water where its pressure is great enough to effect penetration of the lining. Where grout was used to permanently seal off water it was nowhere reported as successful. This indicates that it should only be used as an aid to sinking.

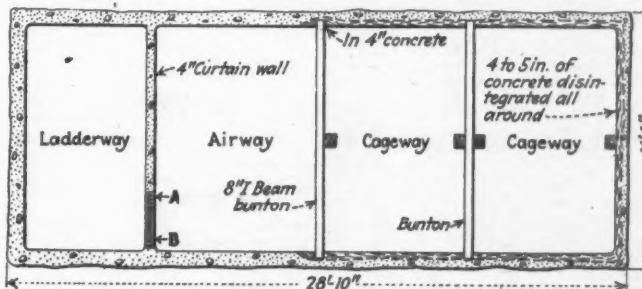
In many of the successful linings no drainage of any kind was supplied and the success of these linings to date can only be attributed to the dryness of the strata which they penetrate.

One company with 18 concrete linings has, within the past year, drilled from one to three holes outside the shafts to carry water to the bottom and to stop penetration of the concrete. After these linings had thus been rendered dry, their faulty sections were repaired. So far the result has been satisfactory but the work has yet to pass through the season of greatest temperature variation, which, at the same time, furnishes the largest quantities of water. This company has one shaft in which, three such linings were built within nine years.

Good concreting practice demands that the mixture should be as dense as possible. Uniform density can best be maintained by checking the mix volume with actual weights at sufficient intervals to avoid erroneous volume measurement caused by the swelling of damp sand.

During at least the first 48 hr. of setting, the concrete should be protected entirely from contact with shaft water. The cost of this protection in some cases will be high, depending chiefly on the quantity of water in the strata penetrated and to a much lesser degree on the ingenuity of both the designing engineer and the contractor.

A typical failure, designated as Shaft No. 9 in the accompanying table, is an intake airway that was sunk and lined in 1915. The drawing shown with this article



Shaft Section Showing Disintegration of Curtain Wall

This rectangular shaft contains four compartments, yet it is crossed by only one curtain wall, of reinforced concrete 4-in. thick. Unquestionably disintegration of the lining resulted from alternate freezing and thawing of ground water penetrating the shaft walls. Strangely enough, the curtain wall, not subject to direct contact with this water, in places suffered complete disintegration from A to B, only the reinforcing being left.

*Abstract of paper entitled "Failure of Concrete Shaft Linings at Pennsylvania Bituminous Coal Mines," presented before a meeting of the Engineers Society of Western Pennsylvania, Nov. 24, 1925.

is a section of this shaft. It represents an especially difficult condition in that the shaft sinking was practically dry with water pressure developing later on.

In the lining mixture a standard grade of Portland cement was combined with Allegheny River sand and gravel in the proportions of 1:2½:5. Aggregates from the Allegheny River were chosen because they are freer from foreign matter than are those dredged from the Monongahela River. No water-proofing was used. No grouting was done, and no water rings installed. The concrete was rammed tight in a workmanlike manner.

The curtain wall, which was 4 in. thick and reinforced with vertical wires on about 15-in. centers, was com-

posed of a mixture of 1:2:3 with the same cement and aggregates as the lining.

The shaft, which is about 215 ft. deep, penetrates rock only, and while it was being sunk practically no water was encountered. Soon after the shaft was completed, the lining became wet near the surface and a drill hole was put down behind the shaft to relieve water pressure.

In the spring of 1922, after the last thaw, the surface of the lining began to scale off in small sections about an eighth of an inch thick. Little additional disintegration took place until the winter of 1922-1923. Alternate freezing and thawing during that season continued the

process of scaling and when spring came the disintegration had taken off as much as 4 to 5 in. from the face of the lining opposite the cage ways, as shown on the drawing. The curtain wall from A to B was destroyed entirely, nothing being left of it except the bare reinforcing.

Disintegration of the concrete began about 45 ft. below the surface and continued to the bottom of the shaft. In many places the lining had completely fallen away from the ends of the steel buntons that held the guides and in several instances the buntons were loose at the ends and supported altogether by the guides. In places the shaft lining had entirely fallen out, showing the rock. In many places also the concrete had a soft, rotten appearance and was easily dug out with a pick. In one or two cases where an exceedingly small stream of water percolated through the concrete, there were deposits of white, mushy material that looked very much like lime.

In cold weather the ice around the lining frequently required trimming with picks so that the cages could have clearance. At the ends of the airway section the lining was intact and the surface of the concrete was apparently perfect. Fifty thousand cubic feet of air per minute, about one-fourth of the total intake for the mine, enters this shaft. The concrete lining was recently replaced with one built of brick.

Data covering the 30 linings that failed are set forth in the accompanying table.

A study of the conditions in both the successful linings and those that failed prompts the conclusion that concrete lining practice may be improved by careful attention to the following details:

(1) By providing sufficient drainage behind the lining to relieve natural water pressure from

Pertinent Data Relative to Shafts in Which Linings Failed

No. of In- stall- ation	Year Shaft Was Sunk	Year Lining Was In- stalled	Is Shaft Down- cast or Up- cast?	Esti- mated Leakage Gal. per Minute	How Long After Instal- lation Before Disinte- gration Began?	Pro- por- tions of Con- crete Used	Kind of Aggregates Used	Were Water Rings In- stalled?	Was Any Grout- ing Done?	Was Back Drain- age Sup- plied?
1	1917	1917	Down- cast	50	2 yr.	1:2:4	River sand and gravel	No	No	
2	1917	1917	Down- cast	30	2 yr.	1:2:4	River sand and gravel	Yes	No	
3	1918	1918	Upcast	20	2 yr.	1:2:4	River sand and gravel	Yes	No	
4	1917	1917	Both	5	At once	1:2:5	Gravel and crushed sandstone	No	Yes	
5	1918	1918	Both	10	At once	1:2:5	Gravel and crushed lime and sandstone	No	No	
6	1917	1917	Down- cast	20	3 mo.	1:2:4	Crushed sandstone	No	No	
7	1917	1917	Both	20	3 mo.	1:2:4	Crushed sandstone	No	No	
8	1920	1920	Down- cast	30	1 yr.	1:2½:5	Broken stone and gravel	No	Yes	
9	1915	1915	Down- cast	10	7 yr.	1:2½:5	River sand and gravel	No	No	
10	1917	1917	Upcast	10	2 yr.	1:2:4	River sand and gravel	No	Yes, not successful	
11	1917	1917	Down- cast	10	At once	1:2:4	Sand, gravel and crushed rock	No	No	
12	1914	1914	Down- cast	30	1917	1:3:4	River sand and gravel	No	Yes	Drain tile
13	1914	1914	Down- cast	30	1915	1:3:4	River sand and gravel	No	Yes	Drain tile
14	1914	1914	Down- cast	20	1915	1:3:4	River sand and gravel	No	Yes	Drain tile
15	1914	1914	Down- cast	20	1916	1:3:4	River sand and gravel	No	No	Drain tile
16	1916	1916	Down- cast	30	1917	1:3:4	River sand and gravel	No	No	Vertical pipes
17	1918	1918	Down- cast	20	1920	1:3:4	River sand and gravel	No	No	Vertical pipes
18	1906	1919	Neutral	..	1922	1:2:4	Slag and sand	No	No	Bleeder pipes
19	1907	1919	Neutral	..	1922	1:2:4	Slag and sand	No	No	Bleeder pipes
20	1914	1914	Down- cast	Seepage	Uncer- tain	1:2½:4	Sandrock, gravel and sand	No	Yes	No
21	1919	1919	Down- cast	30	1922	1:2:4	Sand and gravel	Yes	No	No
22	1909	1910	Down- cast	30	1915	1:2:4	Sand and gravel	Yes	No	No
23	1914	1914	Down- cast	30	1918	1:2:4	Sand and gravel	Yes	No	No
24	1919	1919	Down- cast	20	1922	1:2:4	Sand and gravel	Yes	No	No
25	1918	1918	Down- cast	30	1920	1:2:4	Sand and gravel	Yes	No	No
26	1911	1911	Down- cast	50	1920	1:2:5	Sand and gravel	Yes	Yes	No
27	1917	1917	Down- cast	10	1920	1:2½:5	Sand, gravel and crushed stone	No	No	Yes
28	1916	1916	Neutral	30	1920	1:3:5	Stone, sand and gravel	No	Yes	Yes
29	1917	1917	Down- cast	Seepage	1918	1:2:5	Crushed sandstone	No	Yes	No
30	1918	1918	Upcast	Seepage	1918	1:2:5	Crushed sandstone	No	Yes	No

NOTES:—Shaft No. 9 described in text. Concrete replaced with brick lining in November, 1925. Shaft No. 12, concrete replaced with brick lining in October, 1925. Shaft No. 14 relined with concrete in 1924. Shafts Nos. 18 and 19, concrete mixed thin on surface and poured through 6-in. pipe to the forms. Cement scaled off surface with honey-combed condition found in body of the concrete. Water pressure doubtless separated cement from slag aggregate despite bleeder pipes inserted to relieve pressure. Shaft No. 20, an excess of water was used but mix was well spaded. Shaft No. 23 was relined in 1921 and 2-in. drain

lines employed. In 1923 drain lines became choked and shaft became wet. Two boreholes were then sunk outside of lining, thus draining water to the bottom. Shaft is now dry. Shaft No. 25, drill holes were sunk outside of lining in 1924. Shaft No. 26, water worked through concrete followed by freezing and disintegration. Lining was replaced in 1923 with 1:2:4 concrete mixed with Medusa water-proofing powder. Rings were cut in old concrete and strata where water flowed; 2-in. pipe conducts water to bottom. Shaft is now practically dry. Shaft No. 28, piers at shaft bottom were replaced and part of lining resurfaced in 1921.

the rock strata and prevent water from penetrating the concrete.

(2) By using a mixture that is uniform, and as dense as possible, with complete protection from contact with both shaft and surface water until setting is complete.

(3) By pouring the mixture into the forms with equipment that does not require the use of water beyond what is needed for proper mixing.

(4) By making closure joints homogeneous with the rest of the lining.

(5) By using grout only as an aid to sinking and not for permanently keeping ground water from contact with the lining.

(6) By more rigid inspection.

It is proposed to continue this study of concrete shaft linings in Pennsylvania and other states as well.

Storage Rack Reduces Rot in Mine Timber Piles

Untreated ties, posts, and capboards have, at best, a short life in the average mine. Proper timber storage such as is provided at the New Castle Coal Co. mine, New Castle, Ala., help to increase it. When the usual method of storing this material is followed, it is not uncommon for posts near the bottom of the pile to lay undisturbed until they rot completely or until they have deteriorated to a point where, after hauling into the mine and perhaps setting, it is discovered that they are unfit for use. In the latter case there is a double loss; the post itself, and the labor expended in taking it into the mine and setting.

The concrete-and-steel timber rack at New Castle eliminates this loss of timbers lying at the bottom of the pile. The rack resembles the self feeders now used in some sections of the country for fattening hogs. As can be seen in the illustrations, old boiler flues are used to form the front and back ends of the bins so that the whole pile of contained posts moves progressively toward the opening near the bottom at the front where the timbers are taken out.

EIGHT BINS FOR TIES AND POSTS

In addition to a bin for capboards, eight other compartments are provided; one for room ties, one for entry ties, and six for posts. The stock of posts con-

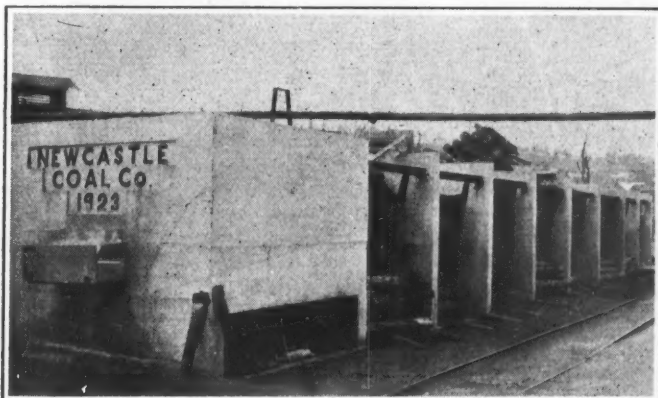


Shades of T. R.! More Nature Fakers!

These clownish lads are not really "white coal" miners, though they are right out of a mine after a full shift. Instead they are Harry Camp (left) and Fireboss Jimmy Simpson, the rock dust twins at the Harmar mine of the Consumers Coal Co., Harmarville, Pa. When this picture was taken they had just finished distributing 116 80-lb. sacks of pulverized stone in their 6-hr. turn below.

sists of the following lengths: 4 ft. 8 in., 5 ft., 5½ ft., 6 ft., 6½ ft., and 7 ft. The respective compartments are of lengths corresponding to those of the posts.

The rack is located close to the mouth of the slope, and a track has been built alongside so that the timbers can be loaded directly into the mine cars. Having the various lengths of posts in separate bins lessens the mistakes in filling orders for timbers of any specified length. The rack adds neatness to the appearance of the timber yard.



Front and Back Views of Rack That Adds to Life of Mine Timber

At the left is the front of the New Castle mine. Taking posts from the bottom of the pile insures against deterioration that might be caused by long storage close to the ground.

The rear of the racks is to be seen in the picture at the right. Wagons deliver-

ing the timber are driven along this side of the rack. Each length of post is put into the bin of corresponding length. Old boiler flues were used to shape the end of the bins so as to make the posts feed progressively toward the opening.

New Tipple Prepares Friable West Virginia Coal

Larger Sizes Picked Separately—All Grades May Be Reunited or Shipped Alone—Bradford Breaker Salvages Coal

A 3,000-TON PLANT for the preparation of bituminous coal at Elkhorn, W. Va., on the main line on the Norfolk & Western Ry. was recently completed for the Crozer Coal & Coke Co. This installation is particularly interesting in that it is intended to treat with as little degradation as possible the friable Pocahontas coal produced in this region. It is by no means an experiment, however. About five years ago the engineers responsible for its construction designed and built the preparation equipment serving the Pageton mine of the same company.

When it was decided that a new plant should be built at Elkhorn, it was deemed advisable to embody in its construction the type of equipment that had proved its utility at Pageton. Certain details have been added, however, so that the new tipple can prepare five different sizes of coal loading them on four tracks. This was accomplished by providing a pea coal bin of 220 tons capacity spanning the nut-coal track. Thus both pea and nut sizes are loaded upon the one track.

The quick-return, oscillating picking table installed in this plant is of large capacity and so arranged as to segregate the lump and nut coals, delivering each to separate picking spaces thus affording ample opportunity for removing the impurities. This is accomplished by using a "wing" type of screen which permits not only separate picking of the various sizes but their recombination after screening and cleaning. Thus either picked nut and egg coal can be made or these sizes can be combined with the others when picked run-of-mine is to be shipped to satisfy a fastidious market.

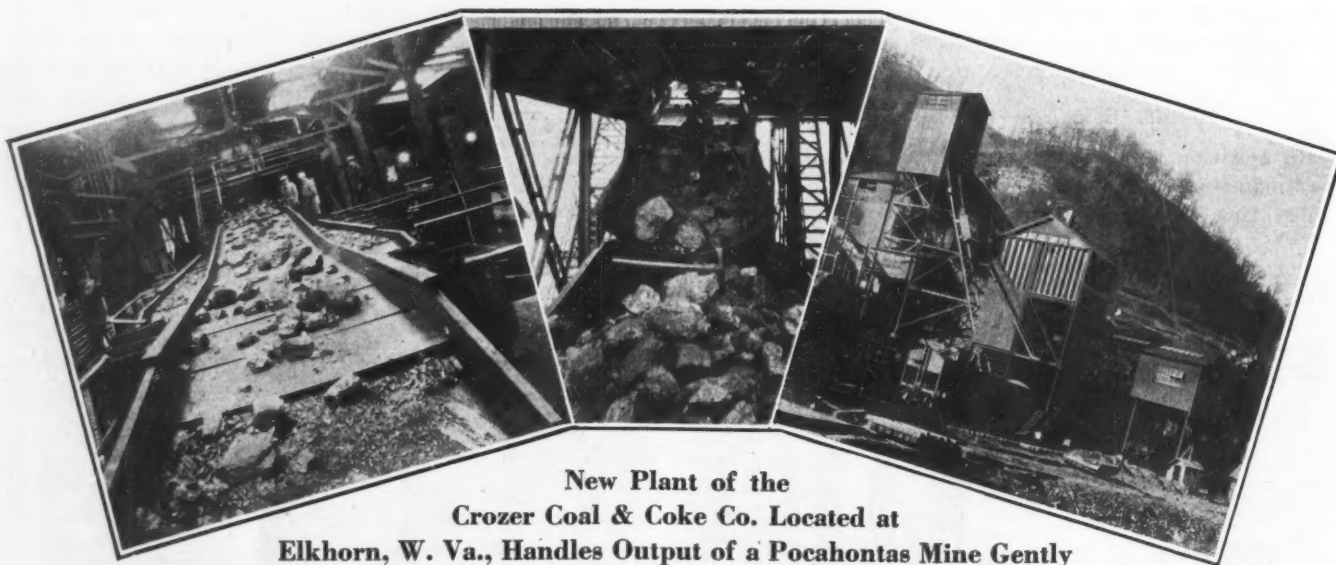
In the accompanying illustrations, one photograph shows this feature, how the lump coal proceeds in the middle compartment by itself and is separately picked, while on the side wings the nut and egg coals receive separate treatment by the pickers, after which these various sizes are recombined to form a picked run-of-mine. In this view the coal is moving toward the camera.

Bone with good coal adhering to it, and slate or rock are picked out and disposed of separately through chutes leading to a two-compartment conveyor which delivers these materials into a large, duplex hopper, automatically feeding to a double compartment skip. This in turn elevates these products to a Bradford breaker and a rock disposal bin, respectively. The breaker salvages the good coal from the bone and rock and returns it to the screens for sizing into nut, pea and slack. This relieves the pickers of considerable labor, enables the plant to handle a larger daily tonnage and saves good coal that otherwise would go to the rock and slate disposal dump. These economies justify its cost.

USE SHAKING LOADING BOOMS

For carefully loading the lump, egg and nut coals after screening, picking and rescreening, shaking loading booms are employed. These consist of two reciprocating sections balanced against each other. The upper sections are provided with liberal rescreen areas so that any degradation made in the process of picking on the table is finally removed just before going to the railroad car.

The central illustration shows the lump coal boom loading down close to the coal in the car. The booms in this tipple deposit their loads in the cars with a minimum of drop and breakage. The mechanical simplicity of these devices also renders them highly efficient and popular. Screenings from them are delivered to the conveyor handling bone pickings and eventually



**New Plant of the
Crozer Coal & Coke Co. Located at
Elkhorn, W. Va., Handles Output of a Pocahontas Mine Gently**

At the left is shown the combined screen and picking table. First the coal passes over screens where the various sizes are separated. The smaller coals then travel along the wings where they are separately picked. Near the discharge end of the table the smaller sizes may be either reunited with the lump for shipment as picked run-of-mine or each size may be loaded separately.

The lump loading boom is illustrated in action in the center photograph. This inclined chute shakes back and

forth longitudinally. Its inclination is below the critical angle so that the coal refuses to slide except when the trough is oscillated. Chutes of this kind place the coal in the cars gently and with small breakage. In this installation the upper end of the chute carries degradation screens so that the product is placed on the car in excellent condition.

The Elkhorn tipple is at the right. At first sight this installation does not appear appreciably different from others—it is in its details, however,

that that differentiation becomes apparent. Five sizes of coal may here be loaded on four tracks. This is made possible by a pea-coal bin of 220 tons capacity to which this size is delivered and from which it may be loaded either direct to car or passed to it by way of a shaking loading chute. Note the two-compartment skip which is here shown approaching the dumping point. This elevates the slate and rock to the refuse bin and the intergrown coal and rock to a breaker that salvages the coal.

find their way to the screenings car on the slack track.

For removing pea coal from the 1-in. and smaller size an electrically vibrated screen is placed beneath the picking table between the nut and slack tracks. The fine material from this unit is delivered to a belt conveyor which elevates it to proper height for loading into the slack car. The pea coal or oversize from this electrically vibrated screen is elevated to the pea bin from which it can be loaded into railroad cars by either of two methods. The first is intended for emergencies only and is by means of a gravity loading chute on which this material is rescreened to remove any fines that may have been made during its passage through the pea coal bin. The second is by way of the boom ordinarily used for the nut coal. To send this material by this route a special gate and chute delivers it from the pea bin to the rear end of the upper section of the shaking nut boom. By this means the pea coal is mechanically rescreened over this device and is "boom loaded" so that it satisfies the most particular markets.

An up-track view of the plant accompanying this article shows the pea bin as well as the two-compartment skip for elevating the rock pickings to the refuse bin and bone pickings and rescreenings to the breaker. As previously explained, the salvaged coal from the bone pickings together with the rescreenings from all the sizes is returned to the main screen and eventually finds its way to the nut, pea and slack coal cars.

The operation of this skip equipment is automatic in

every respect. It is automatically loaded, started, stopped, emptied, and reversed, and requires no attention from the plant attendant. The electric controller employed for this service is provided with an oil dash pot and is fully inclosed within a steel cabinet. It is unfailing in operation and permits the continuous ascent and descent of the skip. The illustration shows it approaching the dumping position.

PLANT WELL LIGHTED AND FIREPROOF

This plant is of heavy construction throughout, is lighted with a generous number of windows and skylights and is covered with corrugated asbestos-protected metal. All units of the equipment are separately motor driven with remote control for starting and stopping.

All drives are protected by guards for the safety of the workmen. The layout of the machinery and the size of the tipple provides ample room for the pickers and other workers while the equipment is running, and the arrangement is such that all machinery is accessible for its proper care and operation.

The results obtained at this preparator so far as the loading of clean, carefully sized coal containing a minimum of degradation is concerned as well as its economy in operation and maintenance, warranted this company in recently contracting with the Roberts & Schaefer Co. designer and builder of this plant for a similar but larger capacity installation for its Upland (W. Va.) mine.

International Explosion Tests Prove U. S. and British Coals Alike

There is but slight difference in the behavior of standard American and British coals when subjected to identical tests to determine the quantity of stone dust which must be mixed with coal dust in order that the mixture shall be incapable of propagating flame when raised as a cloud in the air. This was determined by co-operative tests conducted at Pittsburgh, Pa., by the U. S. Bureau of Mines and by the Safety in Mines Research Board at the British Experimental Station at Eskmeals, Cumberland, England. The importance of this finding is that it should render available for direct application to each nation's problem of mine danger the results of the other's experiments.

Mining engineers have no doubt been puzzled heretofore by the apparently different conclusions arrived at by the explosions in mines committee of the British Home Office and the Bureau of Mines of the United States regarding the quantity of rock dust which must be mixed with coal dust in order that the mixture shall be incapable of propagating flame when raised as a cloud in the air.

The British experiments have been confined almost entirely to dust from the Altofts Silkstone coal. The American experiments have dealt with a wide diversity of coals. But recently each government has tested imported samples of the other's coal dust. The results obtained form the basis of a report just issued by the Mines Department of Great Britain under the terms of the arrangement for co-operative research made between the Safety in Mines Research Board and the U. S. Bureau of Mines. Copies of this report, known as Safety in Mines Research Board Paper No. 13, "Stone dust as a preventive of coal dust explosions. Compar-

ative tests," by G. S. Rice and R. V. Wheeler, may be obtained from H. M. Stationery Office at Adastral House, Kingsway, London, W. C., 2, at a price of 3d. net, plus the cost of foreign postage.

EXPLOSIBILITY OF AMMONIUM COMPOUNDS—An investigation of the properties of ammonium nitrate that influence its safety in storage, handling, and use, is being conducted by the U. S. Bureau of Mines, in co-operation with the National Research Council. The investigation during the previous fiscal year had shown that ammonium nitrate was not combustible; supports the combustion of oxidizable materials; is not readily detonated by fire or heat, but can be detonated by a No. 8 detonator alone and by boosters of various explosives. The detonation is aided by increased confinement and greater density of the ammonium nitrate. During the past fiscal year the effect of temperature on the sensitiveness of ammonium nitrate and the rate of detonation of ammonium nitrate at different temperatures was determined. It was shown that ammonium nitrate is more sensitive to detonation at the higher temperatures, and that its rate of detonation was greater at the high temperatures.

As part of the program in the study of the explosibility of ammonium compounds, an investigation has been conducted on the explosibility of urea nitrate at the request of the Fixed Nitrogen Research Laboratory. The Bureau's interest in this material is in its possible use as an explosive or a component of explosives. An investigation, therefore, was made to determine whether it was in fact an explosive. The preliminary tests showing that urea nitrate is readily detonated by a No. 8 electric detonator, the investigation was then extended to determine the physical properties of urea nitrate as an explosive.

Union Pacific Coal Co.'s Code of Standards—IV*

Safety Standards (Continued)

7. Working panels shall be sectionalized by dusting and dust barriers as shown in Fig. 18.

8. In any place where complete protection is not afforded by the foregoing, additional districts shall be established which shall be sectionalized by dust barriers in a manner similar to the foregoing and subject to the approval of the safety engineer.

9. Areas worked by the room-and-

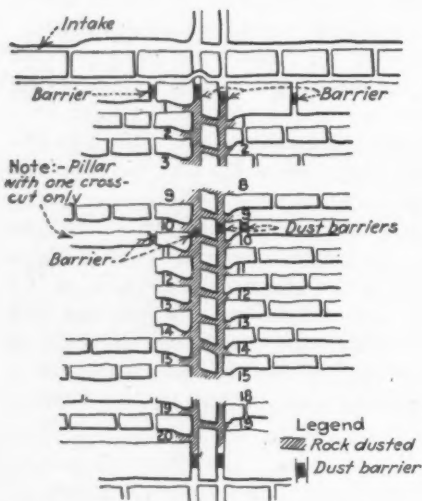


Fig. 18—Protection of a Panel Slope

Rock-dusted travelways supplemented with barriers separate the workings so that not more than twenty rooms are included in one section.

pillar method off entries shall be sectionalized in the manner shown in Fig. 19.

10. Slopes, panels, entries, haulageways and traveling ways shall be rock dusted in a manner prescribed by and subject to the approval of the safety engineer, which, however, shall be in a manner now or hereafter approved by the U. S. Bureau of Mines and the state mining inspector.

11. All bugdust (machine cuttings) must be loaded out before the place is shot. Bugdust shall be thoroughly wetted down before loading.

12. Cutterbars of all mining machines must be equipped with hose and water.

*This is the fourth of a series of articles giving the Code of Standards put into effect by the Union Pacific Coal Co., at its operations in Wyoming. The first three articles appeared in the issues of Dec. 10, 17 and 24, and the remainder of the code will be published in future issues in this form that permits of easy filing.

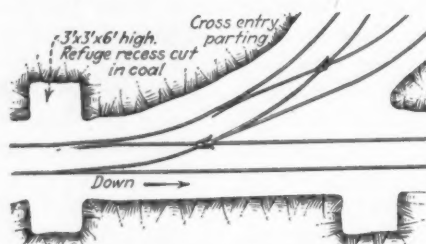
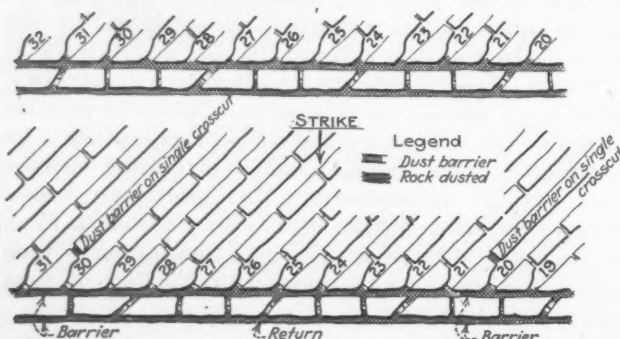


Fig. 20—Refuge Holes Along Haulageway

Recesses are cut in the ribs of the gangway at switch points on main slopes to provide a refuge place for rope riders and others.

13. Water lines shall be extended to all working faces.

14. Working places will be thoroughly sprinkled by the miner for a distance of 50 ft. from face before shooting, otherwise the place will not be shot.

15. No persons except those duly authorized by the mine foreman shall be permitted to ride on any empty or loaded trips.

16. Rope runners shall see that on trips devoted to the hoisting or lowering of men that no one is permitted to ride unless he is seated. Over-crowding of man trips or riding the "hitchings" of man trips is absolutely prohibited. Persons boarding or getting off man trips while in motion subject themselves to discharge.

17. Sec. 4,454, Wyoming Compiled Statutes.—" . . . And such train

provided for that purpose and it shall be a violation of the law for any miner or other person to carry his tools except as herein provided."

18. Safety manholes shall be located every 50 ft. on all main haulageways and slopes.

19. Man or refuge holes at entry switches on main haulage slopes will be arranged as shown in Fig. 20. Manholes shall also be provided at all heading switch positions upon which haulage is mechanically operated.

20. At crossings of all regular traveling ways and locomotive haulage roads, and on partings, the trolley wire shall

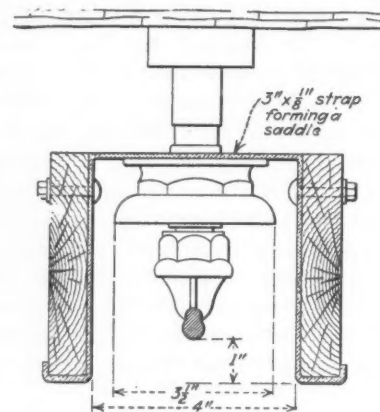
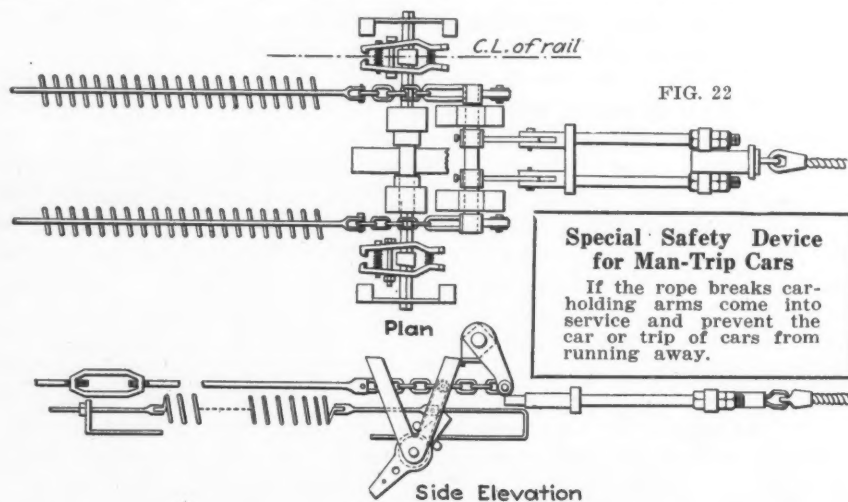


Fig. 21—Trolley Wires Are Guarded

This method of protecting trolley wires is used where a travelway crosses under a trolley and also at partings.



of cars known as a man trip shall not be run at a greater speed than 5 m.p.h. When tools are carried on man trips they shall be carried in a separate car

be protected by a guard which shall be supported in the manner shown in Fig. 21.

21. At all mines where man trips are handled by hoists on slopes, the man trip shall be provided with a safety device which will prevent the trip from running away in the event of breakage of the hoisting cable, or the trip becoming uncoupled. These devices shall conform to Fig. 22, details of which may be obtained from Drawing P-126, on file in the chief engineer's office.

22. All slopes including panel slopes being driven to the dip in development shall be protected by a safety switch which shall conform to Fig. 23.

23. At the slope entrance to each mine there shall be installed a safety

FIG. 19

A Protecting System

In mines where operations are carried on by the room - and - pillar method, dust barriers are placed every ten rooms apart. Room pillars are cut by one crosscut only and a barrier is placed therein.

block that shall conform in plan to Fig. 24.

24. The stop block for empty cars at the knuckle shall be according to Fig. 25.

25. First aid material shall be kept at all panel hoists. In headings worked by the room and pillar method, there shall be at least one complete first aid outfit, located at some central point.

26. The locations of all first aid outfits shall be designated by the presence of a blue light.

27. It shall be the duty of the mine foreman to see that first aid outfits are kept supplied with all necessary mate-

FIG. 25
Stop Block for Empty Cars

A lever-operated bumper block arranged so that a car may either be stopped or permitted to pass through is constructed as shown in the above illustration. The movement of the stopping block may be increased by shortening the distance A.

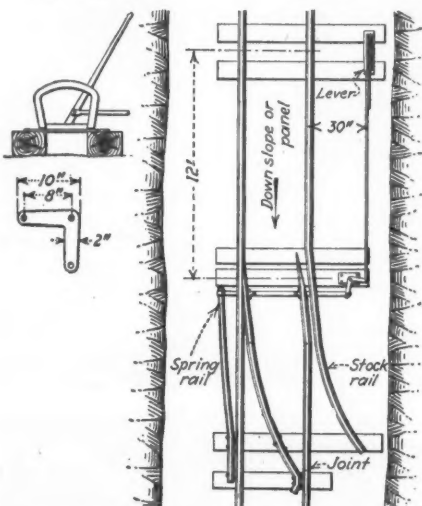
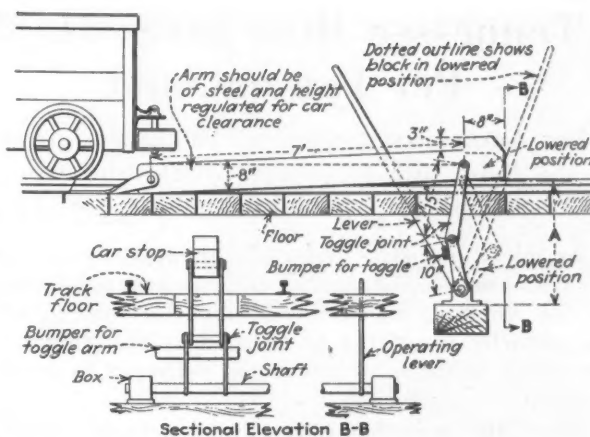


Fig. 23—Derail Switches for Slopes

Normally this derail device stands in such a position that a car coming down the grade is prevented from passing this point. Whenever a car or trip of cars is to descend the grade, the switch lever must be held so that the straight track can be used.

rial and that this shall be in good condition at all times.

28. In addition to first aid supplies at the indicated stations in the mine, all foremen, assistant foremen, fire bosses, motormen, rope runners and

trained first-aid men shall carry approved pocket first aid packets at all times while in and about the mines.

29. Provision for the care of injured persons shall be made in accordance with the wage agreement as follows:

"There shall be at each mine sufficient blankets, oil, bandages, cots, etc., readily available to properly care for and convey injured persons to their homes or the hospital after an accident; said equipment to be kept in a dry place. Rooms suitable for the care of injured persons shall be provided at each mine by the company. Suitable ambulance service shall be furnished for all mining districts . . ."

30. All mechanical haulage shall be provided with efficient head and tail lights.

Wyoming Compiled Statutes.—"Each locomotive employed in underground haulage in a coal mine shall be equipped with an efficient gong and with an efficient headlight, both of which shall be maintained in good operating condition. Motormen must use the headlight and gong in a way to effectively warn persons of danger. When mine cars are lowered on slopes, or when pushed by a locomotive underground, an efficient trip light, maintained in

working order and kept lighted, shall be carried on the front end of the forward car in a position where it may be plainly seen by persons ahead of same. When loaded or empty mine car trips are being pulled by locomotives or animal power through entries or haulageways an efficient trip light, maintained in working order and kept lighted, shall be carried on the rear

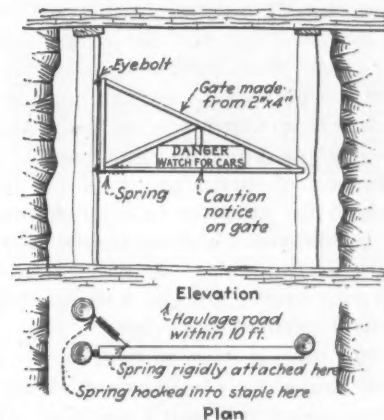


Fig. 26—Danger Warnings

When travelways enter upon or cross main haulage roads, gates which swing away from the main road are provided. These gates are hung either so that they close of their own weight or are assisted by a spring.

end of the last car at all times. A marker board, with an area of not less than one foot square, painted white and kept clean for visibility, may be substituted for the trip light on trips which are being pulled by locomotive or animal power; provided, however, that this section shall not apply to the gathering of cars or to any hauling of cars in a mine except on slopes and main entries."

(NOTE: No trip marker other than a red electric light will be permitted or used in the mines of the Union Pacific Coal Co. The same to be carried on the inby end of all slope trips.)

Sec. 2—"Any person or corporation violating any of the provisions of this act shall be deemed guilty of a misdemeanor and be subject to a fine of not more than \$200."

31. Wherever a traveling way crosses a main haulageway, there shall be installed gates that will swing inward and away from the haulageway. These gates shall be provided with springs or weights, which will make them positive in closing. (See Fig. 26.) Gate locations shall be designated by the safety engineer.

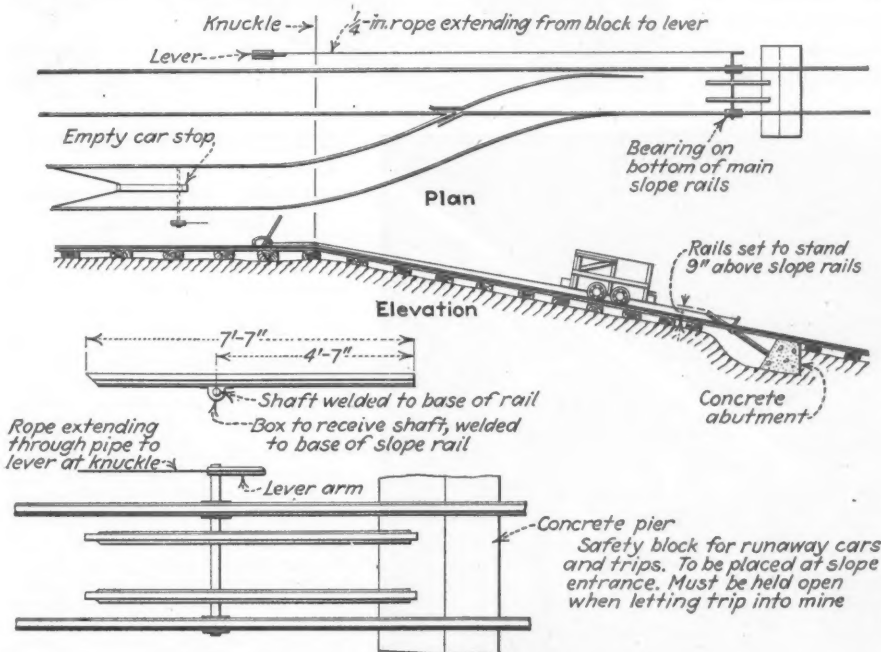


Fig. 24—Safety Block Checks Runaway Slope Trips

Slope entrances are protected so that runaway cars or trips cannot enter the mine. A control lever at the knuckle operates a safety stop located between the rails on the graded section leading to the inside workings.

Tennessee Mine Saves \$1.75 Per Ton on Sand

For Locomotives, Crushed Sandstone Proves
a Substitute for River Sand — Suitable
Stone Quarried Near Drift Mouth

An ideal abrasive material for applying on mine rails to prevent slipping of electric locomotives would be one which is an electrical conductor, one in which the particles would not be crushed by the weight, and one which would have a low cost delivered to the locomotive.

When the material is applied sparingly, which it should be for the best effect against slipping, the conductivity is an unimportant factor. For that reason, and because of the abundant and widely distributed supply of Nature's ready-made material; plain sand as found in the rivers is the abrasive used on a large per cent of the mine locomotives. However, even washed river sand may have a comparatively high cost when delivered to the sand house at the mine.

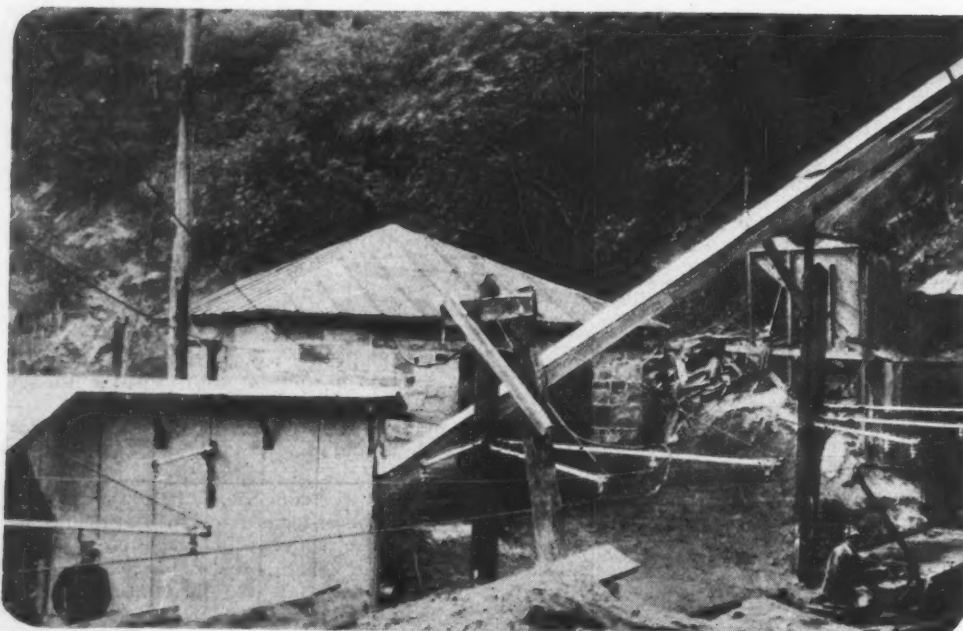
At the New Caryville Coal Co., Caryville, Tenn., river sand cost \$2 per ton f.o.b. mine, and \$3 per ton by the time it was put into the sand house. Labor of unloading from the railroad car, hauling up a 6,000-ft. monitor plane, and shoveling into the sand house near the drift mouth made up the extra dollar. Aside from the high cost of the river sand, the trouble and inconvenience of handling it were, in themselves, reason enough for turning to a substitute made from a seam of sandstone which outcrops about 40 ft. above the main drift mouth. It was found that this served the purpose practically as well as the river product, so it is now used exclusively.

The rock is easy to quarry, requiring little shooting. It is hauled by wheelbarrow about 75 ft. to the crusher house which is a small building, about 6x10 ft., located at the head of a chute leading down to the sand house.

The crusher is driven by a 20-hp. motor. The product from the crusher descends by gravity through the chute to the sand house where it is screened, dried if necessary, and delivered to the locomotives. G. W. Pickle, superintendent of the New Caryville mine,

states that the sand costs about \$1.25 per ton as compared to the three-dollar cost of the sand formerly used.

The use of crushed, local sandstone on locomotives has been tried at a number of mines, but in many of these instances has been given up because of the sand being too fine or mixed with too much binder. No doubt, however, many mines of this country are using crushed sandstone, instead of purchased sand.



Obtaining Locomotive Sand Cheaply at Home

The illustration at the top shows a part of the sandstone seam from which the new Caryville Coal Co. obtains rock for making sand for locomotives. The 2-ft. stratum at the bottom of this quarry which outcrops about 40 ft. above the main drift mouth of the company's mine, is far superior to the rock above for this purpose. The building shown immediately below, houses the crusher, a "Tarvin Pulverizer" driven by a 20-hp. motor. The stone is broken with a sledge into 6- to 8-in. lumps before it is fed to the pulverizer. From the crusher, a chute conveys the sand to the sand house, shown in the illustration at the left. The sand obtained in this manner costs \$1.25 per ton delivered in the sand house as compared with a cost of \$3 per ton for river sand.



News Of the Industry



Hard-Coal Miners and Operators Resume Joint Wage Conferences; New York Labor Makes Peace Plea

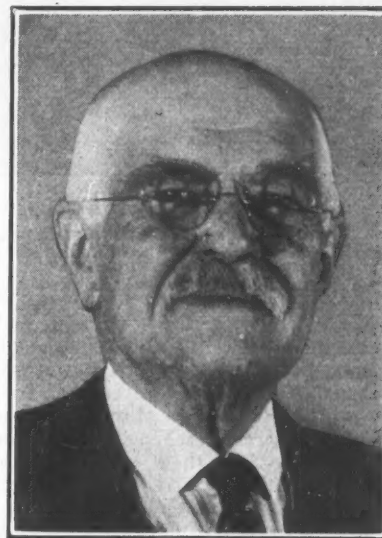
The anthracite joint wage conferences were resumed at the Union League Club, New York City, on Tuesday of this week, with both sides professing to be in a receptive mood, but with neither operators nor miners giving any indication that they had receded from the positions held when the conference recessed over the holidays on Dec. 31. In the interval between the two sessions, however, outside pressure to reach an agreement has been increasing. This, the optimists believe, may be effective enough to hold the conference together until a new contract is signed. The nearest approach to a confirmation of this view was the fact that the joint sessions were still continuing at the time this issue of *Coal Age* went to press. That—and nothing more.

Outside pressure to end the strike has been coming from several forces. On the eve of the conference this week business interests of the Scranton region telegraphed representatives of both the miners and operators that "public patience has reached the break-

ing point" and that the public "would impose its penalty upon those who contribute to a continuation of the situation with its deplorable inhumanities." Members of the Scranton Ministerial Association met with John L. Lewis, president of the United Mine Workers, in New York on Jan. 5 to present anew "the moral and humane aspects" of the situation. The Rev. J. J. Curran of Wilkes-Barre also appeared upon the scene. Metropolitan editorial criticism of the refusal of the union to accept arbitration has been growing more severe.

A plea for a settlement from an unexpected source was made public Monday when John Sullivan, president of the Central Trades and Labor Council of New York, appealed to Governor Smith and Mayor Walker to use their good offices in promoting a speedy and amicable adjustment of the controversy which was endangering the comfort and the health of "750,000 organized workers" in the city.

The negotiations reopened at the



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Alvan Markle

Chairman of the joint conference of anthracite operators and miners in session at the Union League Club, New York City. Mr. Markle's peace plan, printed in *Coal Age*, Dec. 31, has been the subject of much discussion since both sides resumed negotiations to settle the strike.

Union League Club on Dec. 29 started out with all the ear-marks of an endurance contest. The two subcommittees, which had not met since Aug. 4 at Atlantic City, entered into joint conference early in the afternoon and continued the session until nearly midnight. That program was repeated the next two days. By New Year's Eve the contestants were ready to call the struggle a draw and adjourned over the holiday and the week-end although both sides had expressed a determination to sit through earlier in the week.

Notwithstanding the optimistic statement made at the end of the second day's meeting that "a contract can and should be negotiated at this conference," it was the general opinion of those following the parleys that a break was imminent and that only the New Year's recess forestalled an open rupture. Fundamentally both operators and miners had held to their original positions. If there was any concession on the part of either side from the stand taken at the opening of the joint conferences last summer, the public was not let in on the secret.

The Markle plan, submitted by the chairman of the conference, served to emphasize this point. The miners attacked it as arbitration in a new guise. Chairman Markle voiced the opinion that his proposal merely called for an enlargement of existing machinery for settling disputes and that in lieu of the one umpire provided for in the Board of Conciliation setup, he was

Real Earnings of Contract Miners In Anthracite Fields—IV

(SHIPMAN COAL CO.)

Are contract miners in the anthracite fields underpaid?

John L. Lewis, international president of the United Mine Workers, insists that they are. He has repeatedly drawn upon the reports of the Coal Commission, with their misleading figures basing earnings upon the number of starts made, to support his assertion. In a statement published in the Sept. 15 issue of the *United Mine Workers' Journal*, Mr. Lewis declared that the average was \$1,700 per year, from which "there must be deducted over \$200" for supplies.

Check of actual payrolls, however, tells a far different story.

For example, the Glenbrook colliery of the Shipman Coal Co. worked 282 days in 1924 and employed an average of 145 contract miners. Of this number, less than one-third worked regularly enough to appear on each of the 24 semi-monthly payrolls. Of the number

so working eight men averaged \$4,836.75 net. The lowest paid man received \$1,603.58.

The average earnings by \$100 groups for the 46 contract miners covered by the statistics were as follows:

Miners	Average Annual Earnings	Miners	Average Annual Earnings
8.....	\$4,836.75	5.....	\$2,248.42
2.....	3,273.94	4.....	2,149.81
1.....	2,942.27	2.....	2,071.69
1.....	2,867.97	2.....	1,935.16
4.....	2,651.71	1.....	1,896.78
5.....	2,553.76	1.....	1,797.76
4.....	2,419.73	1.....	1,603.58
5.....	2,365.13		

The average earnings for the entire group of 46 men were \$2,806.20. Only five men, it will be noted, earned less than \$2,000 and nearly 20 per cent of the group earned over \$3,000.

At this colliery the unskilled labor rate is 58c. per hour. This, it is asserted, is practically double the prevailing rate in other industries.



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Union Representatives at Hard-Coal Parley

Mine worker members of joint conference about to leave hotel in New York for Union League Club, where negotiation sessions are being held. Left to right: Ellis Searles, editor *United Mine Workers' Journal*; C. J. Golden, president, District 9; Andrew Matthey, president, District 7; Thomas Kennedy, secretary-treasurer of the international union; John L. Lewis, international president; Philip Murray, international vice-president.

suggesting three. This explanation, however, failed to move Mr. Lewis and his associates, who reiterated that they were willing to have a third party interpret a contract once negotiated, but were adamant in their opposition to any plan which permitted a third party to write the original contract.

Union spokesmen, however, showed enough interest in the Markle program to seek further light on how it would work. Reviving one of the arguments urged at Atlantic City, they inquired whether freight rates would come within the scope of the inquiry of the Markle plan commission. The chairman said "no." Then they wanted to know whether the commission could fix selling prices. To this the answer was made that such action would be clearly illegal and was not contemplated in the plan.

Both operators and miners agreed upon the desirability of a long-term agreement. Where they split was on the question of wage revisions. The miners demanded that any wage rates written into a new contract continue throughout the life of the agreement. The operators, with the effects of the Jacksonville agreement known, insisted that any long-term contract incorporate within itself provisions for periodic revisions of the wage rates should economic conditions justify such readjustments.

The last word on the situation up to the New Year's adjournment was contained in the following official statement issued late Dec. 31:

At today's session of the conference the operators presented further arguments for a long-term contract, assuring continuity of production with some form of arbitration to prevent possible deadlocks. The operators stated that they do not seek wage reductions but believe it necessary to provide for adjustment that economic conditions may require in the future. They said their purpose is to avoid suspension of production and that they are willing to adopt any means that will secure this result.

The miners asserted that the provision of the Pinchot plan for a board of investigation and award would afford the operators the protection which they say they need.

The operators suggested a modification of the Markle plan so that after investigation the board, in case of disagreement, would make recommendations to the joint conference within 30 days. If, following these recommendations, no agreement was

reached within the succeeding 30 days, the board would decide the matters in dispute. The operators claim that this would probably make arbitration unnecessary, believing that the recommendations would dispose of the matter.

The miners claim that in the final analysis this proposition provides for arbitration, as does the Markle plan. On this ground they object to both proposals. The miners offer to write two-and-a-half or five-year contract upon definite terms for either period, and no arbitration.

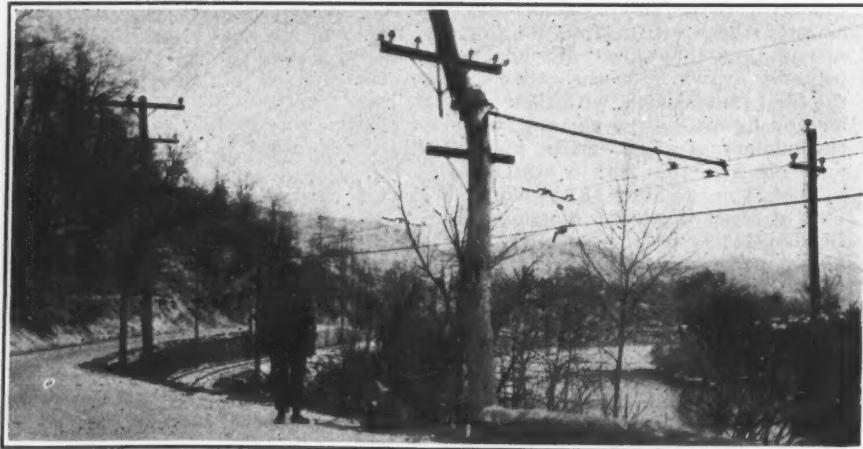
Representatives of the operators and miners have since Tuesday tried diligently to find a basis of adjustment of their differences. Both sides have sincerely applied themselves to this task.

Questions have arisen which require more analysis than is possible in the conference. For this reason the conference has agreed to recess until Tuesday, Jan. 5.

No Distribution Census Yet

No appropriation for a census of distribution will be asked at this time, Secretary Hoover has announced. Until there is abundant proof that such figures are desired there is no chance of obtaining a vote of funds, he feels.

It took five years of sustained effort to get the census of manufacturers. A census of distribution, however, is just as important as a census of production, Mr. Hoover believes.



Attempt to Blow Up Western Maryland Ry. Bridge Wrecks High-Tension Pole

A pre-holiday demonstration against non-union coal operators in northern West Virginia was marked by an attempt to destroy the bridge across the West Fork River at Bingamon on Dec. 23. A piece of flying iron snapped the pole shown above, which is on the far side of the river. The bridge was damaged to the extent of about \$5,000, but repairs were completed and service was restored by Dec. 28.

Pittsburgh Coal Co. Opens Worden Mine

Operations have been resumed at the Worden Mine of the Pittsburgh Coal Co., located near McKeesport, Pa. Work recommenced Jan. 4 under the provisions of the 1917 wage scale. This is the sixth operation in the Pittsburgh district that the company has reopened in recent months, all under the terms of the 1917 agreement. Preparations have been under way for several weeks to start work at this mine.

Renew Attack on Lake Rates

Reopening of the question of the competitive adjustment of rates from mines in the Appalachian region to the Great Lakes for transshipment to the Northwest has been asked in petitions filed with the Interstate Commerce Commission a few days ago. This action was taken by the Pittsburgh Coal Producers' Association and the Pittsburgh Vein Operators' Association of Ohio, complainants in the Lake Cargo Coal cases dismissed by the Commission last summer.

In that proceeding complainants attacked the relative adjustment to the lakes, contending that the rates from the Pennsylvania and Ohio fields were unreasonable *per se* and unjustly discriminatory against that traffic when compared with rates in effect from southern West Virginia and eastern Kentucky mines to the lakes. The examiners who heard the testimony in the case filed a tentative opinion recommending reductions in the rates from the Ohio and Pennsylvania fields complaining and a number of other readjustments in competitive differentials. The Commission, however, disregarded these recommendations and dismissed the case.

This decision was recently referred to in unfavorable terms by Senator Reed of Pennsylvania in his attack upon the failure of the administration to give the Keystone State representation on the Commission. Governor Pinchot several weeks ago urged a reopening of the case and promised state aid to the protesting operators.

Adoption of Arbitration In Hard-Coal Peace Is Hope of Federal Officials

By Paul Wooton

Washington Correspondent of *Coal Age*

Representatives of the public, both on Capitol Hill and in the executive departments, for the most part seem to be of the opinion that the anthracite operators should agree to no truce or permanent settlement that does not recognize the principle of voluntary arbitration of all matters under controversy. It is felt that neither the public interest nor the long-time interest of the industry itself would be served by a quick settlement, which doubtless could be reached were the operators willing to waive the principle of arbitration. To resume work at the status quo would mean, many believe, that the four months' travail would go for naught.

It is recognized that the operators are in a strong position and never before have had such an opportunity to provide for continuity of production.

There is an ill-disguised eagerness on the part of the miners and their friends for a quick settlement. President Green, of the American Federation of Labor, predicts a prompt return to work. His forecast is hailed as a promise by the White House spokesman. The utterance suggests that there is a feeling of discomfort at Federation headquarters in connection with this strike. That it proved to be unpopular is thought not to be surprising to Mr. Green.

The weakening of the mine workers is attributed to the failure of the settlement plan proposed by Governor Pinchot to attract public support and to the realization that little could be expected from the special session of the Pennsylvania Legislature.

Back of these immediate causes has been the remarkable defense put up in the anthracite-consuming area. Even the recent low temperatures failed to reveal any disposition to beg for mercy. Ample evidence has reached Washington that this demonstration of ability to meet the situation without an appeal for federal help has excited the admiration of the entire country. Much of the credit for this accomplishment is being given the leadership in the campaign for the use of substitutes. Success could not have been attained, it is pointed out, had not the people been directed effectively and their determination kept up by frequent communications emanating from those directing the campaign.

One of the most recent statements of the Emergency Fuel Administration of Massachusetts is cited as typical of many well selected messages calculated to put the people on their mettle. In this statement the full administration pointed out that "there is no coal situation outside of the Northeast." Attention was called to St. Louis, which formerly was a regular customer of the anthracite industry and took 500,000 tons of its product each year. Last year St. Louis bought only 40,000 tons of anthracite because "the people have



T. M. Dodson

Has resigned as vice-president of the Pittsburgh Coal Co. in charge of operations. Mr. Dodson, who went to Pittsburgh several months ago, will return to Bethlehem, Pa., to his own company, the Weston Dodson Company. He will retain a connection with the Pittsburgh Coal Co., however, as a consulting engineer.

learned to burn soft coal, which is costing them one-half the price they were paying for anthracite."

The attention the people have given to such doctrine is one of the reasons why it is regarded in Washington as so necessary for the anthracite operators to insist upon a plan that will guarantee against interruption of production. It is believed to be the only course that will protect the industry's \$800,000,000 investment, its \$2,000,000,000 annual turnover and its payroll on which 155,000 names appear.

There is a disposition in Washington also to give generous credit to the foreign language priests for the part they have played in preparing the way for settlement. It was they who revealed to the union leaders that their men, particularly those in the Wyoming region, were ready to go back to work.

Trade Commission Segregates Trial Examiners

Trial examiners of the Federal Trade Commission have been made an independent division and are to be designated hereafter by the chief of that division, according to a statement recently released by the commission. The preparation of all stipulations in settlement of applications for complaint also has been placed in this division.

This change does not mean an increase in personnel or duties, but only the assignment of those related duties where they logically belong. Every one of the duties specified or contemplated to be performed by this new division is now performed by someone in the several departments. Under this new order of things better efficiency will be acquired and the trial examiner's staff will function more economically.

Heretofore the trial examiners who presided at the hearings in the taking of testimony were designated by the examining division which investigated the cases. Some criticism has been made that the division which investigated and recommended complaint should not select the trial examiner to try it.

None would be surprised to learn that the priests went even further and told the union leaders that they themselves would advise the men to go back unless steps were taken at once to reopen peace negotiations. Under present conditions it is probable that the men would be more inclined to take the advice of the priests than to follow the union leaders.

Despite published reports to the contrary, it was stated on Dec. 31 at the Interstate and Foreign Commerce Committee of the House that no arrangements had been made for an inquiry into the anthracite situation. Representative Treadway, who is urging such action, admits that he has been unable to obtain any promise as to what will be done, but that he fully expects that hearings on his two bills will be accorded promptly.



Johnstown Celtic Glee Club that Sang at the
Coal Mining Institute of America Dinner

The men in this choral club are all employees of the Bethlehem Mines Corp. at Johnstown, Pa., and work in and around the coal mines. Back row, left to right: P. Hughes, trackman; R. Tremain, foreman; H. W. Plotts, foreman; D. Lees, miner; W. Regittko, clerk; C. Ellis, salesman; C. L. Strayer, inspector; W. T. Roberts, miner. Center row: T. Griffith, miner; E. Jones, salesman; E. Dodd, miner; D. A. Lewis, supply clerk; B. Hughes,

repairman; E. Roberts, miner; T. L. Jones, machinist; J. Thomas, foreman. Front row: E. C. Roberts, miner; D. Jones, miner; W. E. Ellis, foreman; Prof. J. L. Jones, clerk; Miss Annie Hughes, stenographer; B. E. Henderson, manager; H. B. Mishler, transportation; E. Ellis, clerk; and J. Jones, miner. The fine appearance of the glee club, almost every man attired in a dinner coat, attracted almost as much attention as the excellence of their music.

162 Die in November From Mine Accidents; Ratio to Output Higher

Accidents at coal mines in the United States in November, 1925, resulted in the loss of 162 lives, according to information received from state mine inspectors by the U. S. Bureau of Mines. Three of the fatalities occurred at anthracite mines in Pennsylvania; the remaining 159 were at bituminous mines throughout the country. As the output of bituminous coal in November was 50,780,000 tons, the fatality rate for the month, for the bituminous industry, was 3.13 per million tons, as compared with 2.63 in the preceding month and 2.85 for November a year ago. The anthracite rate for November last year was 7.72; no corresponding rate is available for November, 1925, because of the stoppage of work at the mines.

The November fatalities brought the total number of deaths at all coal mines during the first eleven months of the present year to 1,934 as compared with 2,203 during the same period last year. The accident cost of the coal, as represented by deaths per million tons, was 3.64 as against 4.25 last year. For bituminous mines alone the 11-month rate was 3.27 as compared with 3.99 for the first 11 months of 1924; for anthracite mines alone the rate was 6.40, including dredge coal produced since the strike, as compared with 5.65 during the same 11 months last year.

An explosion at Madisonville, Ky., on Nov. 13, in which five lives were lost,

Mexican Mine Blast Kills 42

The bodies of forty-two victims had been recovered on Dec. 31 from a Mexican National Ry. coal mine at Palau, State of Coahuila, where an explosion occurred Dec. 26.

A score of miners were injured and it is believed that more victims are in the mine. The blast is believed to have been caused by the breaking of a miner's safety lamp, which ignited gas. Palau is about eighty-five miles from Eagle Pass, Texas.

brought the total number of major disasters during the first 11 months of 1925 to 11 with an aggregate loss of 204 lives. During the corresponding months last year 9 similar disasters occurred with a loss of 452 lives. The per-million-ton death rate, based exclusively on major disasters, was 0.38 for January-November, 1925, compared with 0.87 for those months in 1924.

An examination of the causes of the accidents in 1925 shows a slight reduction, as compared with 1924, in the per-million-ton death rates from falls of roof and coal, haulage, and explosives, and a marked reduction for explosions of gas and coal dust. The rate from electricity remained unchanged. The comparative rates per million tons were:

	Jan.-Nov., 1924	Jan.-Nov., 1925
All causes	4.251	3.635
Falls of roof and coal	1.835	1.791
Haulage .....	.608	.592
Gas or dust explosions	1.009	.528
Explosives .....	.179	.163
Electricity .....	.143	.143

West Virginia Coal Output 101,943,765 Tons in 1925

Production of 101,943,765 tons of coal in West Virginia in 1924 established a new high record for the state, according to statistics compiled by R. M. Lambie, chief of the West Virginia Department of Mines. Owing to a change made in the mining laws by the Legislature last spring the calendar year is now used in compiling production statistics instead of the fiscal year, and this will simplify and expedite the collection of data.

McDowell County, as usual, led with an output of 17,860,908 tons, closely followed by Logan County, with shipments of 17,659,307 tons.

The Island Creek Coal Co., of Logan County, was the largest individual producing company in the state, having an output of 4,951,399 tons, or more than a fourth of the entire output of the Logan district. The Consolidation Coal Co. ranked second, with 4,131,477 tons. Nine companies in the state produced over one million tons each, and ten companies produced more than 25 per cent of the state's entire tonnage.

The companies producing more than one million tons each besides the Island Creek and the Consolidation companies, were the United States Coal & Coke Co., Pocahontas Coal Co., West Virginia Coal & Coke Co., Kingston Pocahontas Coal Co., New River & Pocahontas Consolidated Coal Co., Elm Grove Mining Co. and the Bethlehem Mines Corporation.

Coal-Mine Fatalities During November, 1925, by Causes and States

(Compiled by Bureau of Mines and Published by Coal Age)

State	Underground											Shaft				Surface							Total by States			
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Explosions of gas or coal dust.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1925	1924
Alabama.....	3		3								1	7													7	3
Alaska.....																									0	0
Arkansas.....		1										1													1	5
Colorado.....	1											2													3	7
Illinois.....	6		5	3								14													14	4
Indiana.....	1		2									3													3	1
Iowa.....							1					1													0	0
Kansas.....																									0	1
Kentucky.....	11		1	6			2					20													20	6
Maryland.....	1											1													1	0
Michigan.....			1																						0	0
Missouri.....																									0	1
Montana.....											1	1													1	2
New Mexico.....	1											1													1	1
North Dakota.....	1											1													2	1
Ohio.....	7				1			1				9				2	2								11	9
Oklahoma.....																									0	0
Pennsylvania (bituminous).....	15		4		1		3				2	25	1					1		1					27	24
South Dakota.....																									0	0
Tennessee.....	1											1													1	2
Texas.....	1											1													1	0
Utah.....	3											3													3	4
Virginia.....	3											3													3	2
Washington.....	2					1						3													4	3
West Virginia.....	25	4	10		1		3		4			47						1				1	1	3	50	41
Wyoming.....	3		1									4													4	4
Total (bituminous).....	85	6	27	9	3	1	9	1	4		4	149	1			2	3	2		1		1	3	7	159	120
Pennsylvania (anthracite).....	1				2							3													3	51
Total, November, 1925.....	86	6	27	9	5	1	9	1	4		4	152	1			2	3	2		1		1	3	7	162	
Total, November, 1924.....	83	9	25	8	11	2	5	1	5		1	150				1	1	11		1		1	7	20		171

¹Only one fatality, owing to strike in anthracite mines.

Government Wins Case on Commandeered Coal

The United States Government won its case in the second trial of the suit of the White Oak Coal Co. against the government for money claimed to be due for coal commandeered for the use of the navy during the world war. Judge George W. McClintic on Dec. 11 directed a jury in the U. S. District Court for the southern district of West Virginia to bring in a verdict for the defendant. About a year ago the plaintiff was awarded a judgment for \$790,000, which was appealed to the Circuit Court of Appeals at Richmond.

Approximately 210,000 tons was supplied by the company and the government is said to have fixed the price at \$3.08 per ton. It was contended by the plaintiffs that the price continued to rise before the order was filled until at one time it reached \$16.50 per ton.

The government contended that it had a contract at the price made, though the coal was purchased on a commandeering order. It was the contention of the coal company that it had the right under the terms of the order to protect the price and to make claim for the difference. The White Oak Coal Co. was the sales agency for fifteen coal mines in Raleigh and Fayette counties, West Virginia.

Locomotive Fuel Cost Drops Slightly in October

The average cost of coal used by Class 1 railroads in locomotives in transportation train service during October, 1925, was a little below similar figures for September, according to a report by the Bureau of Coal Economics of the National Coal Association, based on figures released by the Interstate Commerce Commission.

The average cost of this coal, which includes any freight charges paid on it by the consuming railroads, is as follows: Eastern district, \$2.65 per net ton; Southern district, \$2.19; Western district, \$2.99; entire United States, \$2.66. These figures are 2c. below the average for September in the Eastern district; no change in the Southern district; 1c. lower in the Western district, and 1c. lower for the entire country.

When comparison is made with the averages for October, 1924, a decrease of 24c. appears in the Eastern district; 15c. in the Southern district; 16c. in the Western district, and 20c. in the United States as a whole. Thus the Class 1 railroads of the United States saved nearly \$2,000,000 in locomotive coal costs because of the decline in cost since the previous October.

The New York Public Service Commission has approved a new rate of the New York Central (East) on coke, coke breeze and coke dust from Buffalo, East Buffalo and Harriet to Leroy and Stafford of \$1.39, a reduction of 13c. per net ton, effective Jan. 19, 1926.

By special permission of the commission a new rate of the Schoharie Valley R.R. has been approved on coke in either direction between Schoharie and Schoharie Junction, 60c. per net ton, effective Dec. 17.



Wolfe Resigns Secretaryship

Officers of the Winding Gulf Operators Association, with offices at Beckley, W. Va., on Dec. 30 announced the acceptance of the resignation of George Wolfe as secretary, which was tendered some months ago. The identity of Mr. Wolfe's successor has not been made public. Mr. Wolfe has been the secretary of this association for the past six years and is leaving Beckley and Raleigh County he is bringing to a close thirty years of activity in the smokeless coal fields of southern West Virginia. Mr. Wolfe's acquaintance and knowledge of the smokeless industry of West Virginia is wide and he has long been considered an authority on coal matters in this section. Accompanied by Mrs. Wolfe he left for a vacation in the South. "I am out of coal entirely," said Mr. Wolfe, "and have not a cent invested in the industry. I consider coal a good thing to stay out of for a while. I have under consideration several propositions which I may take up later, but none of these is directly or indirectly connected with the coal business."

Mistrial in Coronado Case

A mistrial resulted in the third trial of the Coronado Coal Co.'s \$2,200,000 anti-trust suit against district 21, United Mine Workers (Arkansas), local unions and individuals, when the jury at Fort Smith, Ark., failed to reach an agreement late in December. After 72 hours of deliberation the jury reported that it was still in a deadlock and was discharged. Judge Frank A. Youmans probably will reset the case for trial. After eleven years and three months in the federal courts the case is again on the docket for trial before a jury.

Three juries have heard the testimony. The first, in 1917, brought in a verdict for the plaintiffs for \$20,000 actual damages. That judgment was reversed by the Supreme Court of the United States on the grounds that a conspiracy to restrain interstate commerce had not been proved.

Pattison & Bowns in Deal

Full control of Pattison & Bowns, Inc., New York City, coal distributors, was acquired Dec. 28, by the United States Distributing Corporation, through the purchase of a one-fourth interest from Burns Brothers. The corporation had previously owned three-fourths of Pattison & Bowns, Inc., which is the distributor in the East for the anthracite output of the Pennsylvania Coal Co. and the Hillside Coal & Iron Co., both owned by the Erie R.R.

Coal River Company Forms Sales Organization

A coal sales corporation known as the Fuel Distributors, Inc., through which the entire production of mines of the Coal River Collieries Co. will be sold, in addition to heavy tonnages from other fields, was organized last week, according to an announcement Dec. 31 from the office of J. T. Dunigan, Huntington, W. Va., president of the collieries company, which is controlled by the Brotherhood of Locomotive Engineers.

The new concern, which started operation Jan. 2, began business with a contracted tonnage of almost 2,000,000 and expects to swell this to 3,000,000 tons during the first year, establishing an annual business of more than \$5,000,000. The headquarters will be maintained in the Brotherhood of Locomotive Engineers' Bank Building in Cleveland with a branch office at Huntington.

Fuel Distributors, Inc., organized under the laws of Delaware and capitalized at \$200,000, fully subscribed, completed its organization at a meeting in Cleveland Dec. 29, when Fred L. Smith was elected to the presidency; Walter Myers, vice-president; G. G. Hoffman, secretary-treasurer, and Harry E. Moran, Charles Lindquist, W. E. Dunigan and Mr. Huffman, directors, with Mr. Smith as chairman of the board.

Miners Indorse Pinchot Call For Special Session

Christ J. Golden, president of District 9 United Mine Workers, said that the miners are 100 per cent back of Governor Pinchot in his call for a special session of the Legislature on Jan. 13.

In a statement he said the anthracite operators are trying to put the American miner in a "state of poverty," the same position the English miners find themselves in today.

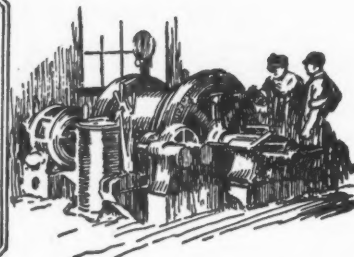
If Governor Pinchot succeeds in putting the coal industry under the Public Service Commission, Golden said, the profits of the operators and their business methods will be exposed to the public.

C. C. & B. Sale Is Completed

Purchase by the Massachusetts Gas Companies of the old firm of Castner, Curran & Bullitt, Inc., of New York City, as well as a number of important mines in the smokeless coal fields of West Virginia—reported in the Nov. 26 issue of *Coal Age*—has been confirmed by the stockholders of Castner, Curran & Bullitt. The transfer was completed on Jan. 2, and the entire issue of stock was taken over by the New England interests. Castner, Curran & Bullitt were the pioneers in marketing smokeless coal, having shipped the first car of Pocahontas to market in 1882. Since then they have been leaders in the distribution of this coal. Lemuel Burrows, long the head of the company, retires from the presidency on the transfer of stock to the new owners, but it is understood that the rest of the personnel of the old organization will remain.



Practical Pointers For Electrical And Mechanical Men



Hammer Used to Surface Arc-Welded Locomotive Tires

Repairing worn locomotive tires by filling is practiced at comparatively few mines, and is accomplished by means of an arc welder. With this method it is not considered practical to put the tires back in service without smoothing the welded surface, so in most cases they are ground or turned to the desired finish.

Turning of the larger tires requires a lathe of size seldom included in the shop equipment of a small mine. A method of handling which does not require a lathe is followed at the Nuttallburg (W. Va.) operation of the Fordson Coal Co.

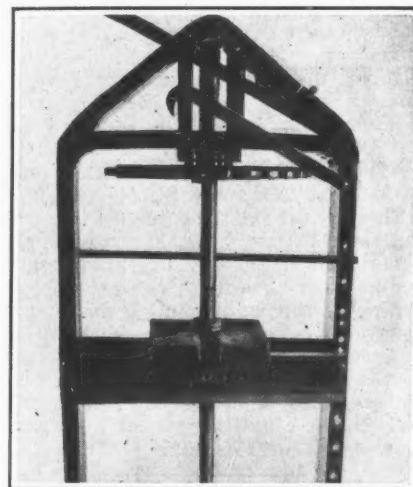
At this mine, C. J. Southard, chief electrician, utilizes one end of the wheel press as part of a rack to hold the truck while filling the tires. The truck is supported by centers in the end of the axle. This brings the tires to a convenient height and leaves them free to be turned by hand as the welding progresses. At the top is fitted an adjustable surface gage which aids in filling to the cor-

rect diameter and helps to detect high or low spots.

Mild-steel electrodes $\frac{1}{4}$ in. in diameter are used for filling. The bead is laid on crosswise and when the last layer is applied each row is hammered vigorously, before it cools, to smooth the surface. This hammering adds materially to the time of welding the tire but probably takes less time than would be required to turn it in a lathe. Hammering makes the welded surface smooth enough so that the locomotive does not ride rough, and so no decrease is noticeable in tractive power.

Small Capacity Press Is Handy Shop Tool

By use of a press, work such as must often be done on armature shafts is accomplished in less time and with more certain results than if accomplished with a hammer or sledge. When a shop is equipped with a wheel press of 100 to 200 ton capacity this machine usually serves



An Improvement Over Hammering

This home-made press proves convenient for work such as renewing armature shafts.

for handling the lighter work also. But at some mines where there is little heavy work to do no press of any kind is provided even though it would pay to have a small one.

V. D. Picklesimer, foreman of the Thealka, Ky., shop of the North East Coal Co., contributes the accompanying photograph of a home-made, hand-operated press which is used successfully for light work. The hand wheel at the top once served as a sprocket on a chain-driven machine. Fastened at the center of the wheel is a threaded steel bushing through which the movable plunger operates. A hook-shaped pawl fastened near the pivot of a long lever arm is used to ratchet the wheel around when the pressure required is such as to make it difficult to be turned directly by hand. The hook engages the teeth of the sprocket.

The one-piece main frame of the press is made from a 6-in. channel. This is braced at the top so as to withstand successfully any ordinary pressure required. The two cross-beams which form the back-stop are adjustable through a distance of several feet. When the photograph was taken the machine was being used to press a collar on a short piece of shafting.



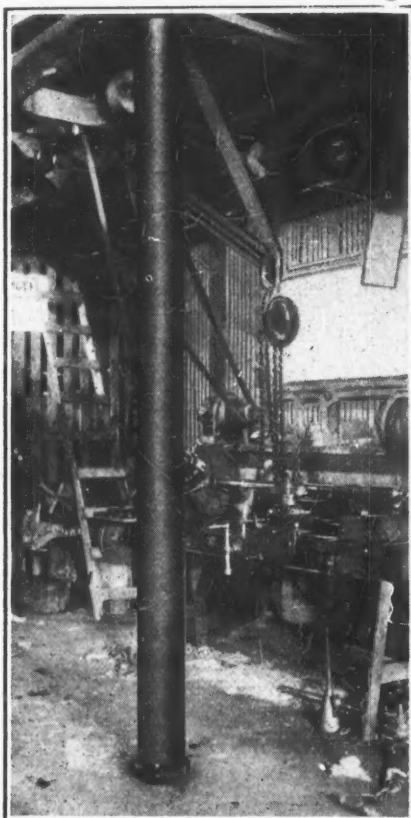
Filling Tires by Electric Welding at a Fordson Mine

By means of a home-made attachment, C. J. Southard utilizes one end of the wheel press as a welding rack. The adjustable surface gage at the top aids in

obtaining a true surface. Each cross row of the last layer of metal is hammered flat before it cools. This method of surfacing the arc-welded tires proves efficient.

Home-Made Revolving Crane Aids Men in Mine Shop

To the list of mechanical stunts for lightening the work of handling heavy objects about coal mine shops M. S. Suffridge, master mechanic, Ajax Coal Mining Co., near Hazard, Ky., adds a home-made revolving jib crane which can be swung in a complete circle. It is shown in the accompanying illustration and consists of an 8-in. round oak post the ends of which are 1½-in. iron pins. A horizontal beam consisting of a 30-lb. rail is strapped to the post at one



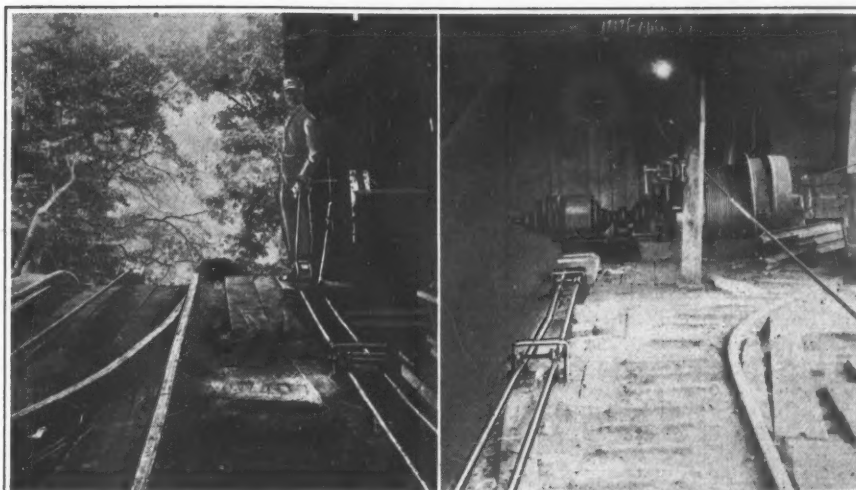
Handles Material Easily

This tackle-block beam, now in service in a mine shop near Hazard, Ky., lifts heavy equipment at any point within its circle of operations.

end and suspended from a 4½x½-in. iron strap to the post at the other. The beam is 5 ft. long. From it is hung a 1½-ton chain block which, together with the swinging beam, has lifted one end of a 6-ton locomotive.

Mine Borrows Switch Control Idea from Railroads

The scheme used by railroads for remote mechanical control of track switches by long connecting rods which ride between rollers has been applied to the control of the friction clutch and brake on a hoist at the top of an incline at the Elsie No. 2 mine of the Consolidated Fuel Co., Elsiecoal, Ky. Photographs of both



Remote Control Makes Operation of This Inclined Hoist Safer

The operator, standing at the top of the slope where his view is unobstructed, can meet emergencies quickly in the same way that the railroad signal towerman controls the distant switches and signals which respond to the levers at his hands.

ends of the installation are reproduced here showing the 40-ft. connecting rods which are made of 1-in. pipe.

The hoist is set back from the point where the incline track breaks to the horizontal and in the clear of the curve, as shown in one of the accompanying illustrations. The incline is steep and rises about 600 ft. For this reason it is dangerous to

locate the mechanical and electrical controls at the hoist out of sight of the incline. By borrowing the switch tower idea from the railroads the Consolidated Fuel Co. has found a way to put all the control devices, mechanical and electrical, at the brink of the hill. From this point the operator has a view of the incline and can act quickly and without signals in an emergency.

Worn Rails Make Good Frame For Motor Barn

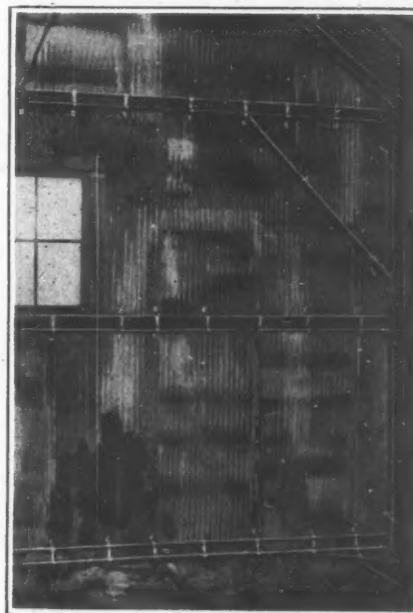
The practice of using rail instead of the more suitable and lighter shapes of material in structural work is seldom commendable from an engineering standpoint. When, however, second-hand rail of little more than scrap value is available, its use may be economical.

Utilization of waste material in such a way represents true saving, since it means turning a comparatively worthless product to a useful end. The mine is an excellent place for the practice of this kind of economy, because, as a rule, an abundance of scrap material is there available.

The entire frame of the 20x80-ft. motor barn of the Southern Mining Co., at Balkan, Ky., was made from old rail. In fact, practically all of the material came from the scrap pile. A few windows and the galvanized straps and bolts for securing the siding made up the only new material purchased for the job. The corrugated metal had seen previous service on an old motor barn, and sand house.

The building has such a neat appearance, inside and out, that, except

for the uneven discolorations on the siding, there is little to suggest that it was built from scrap material. G. L. Birch, chief electrician of the Balkan mine, designed the frame and erected the structure with his "gang."



Scrap Pile Yielded this Frame

Except for the one strap-iron brace all of the framing seen in this picture of the back corner of a motor barn is of old rail. Very little new material was used in the construction of the building.



Problems In Underground Management



High Frequency and Low Voltage Make Face Illumination Safe*

By Edward Hughes

Cumberland, B. C.

Illumination of coal mine workings presents difficulties not usually encountered in other industrial undertakings. The danger from explosion attendant upon the use of any sort of lighting, particularly high intensity illumination in the presence of coal dust or methane has in most instances prevented the use of effective lighting under ground. In electrified mines, hoist rooms, pumprooms, partings and the like are electrically illuminated to a limited extent.

Within a mine where coal dust or methane are liable to be encountered, the illumination is ordinarily obtained from small units giving at best only two or three candle power. Higher labor efficiency unquestionably could be realized if better lighting could be obtained in a safe manner. This higher efficiency would entail quicker extraction, safer working conditions and cleaner coal.

The problem of obtaining better

*Abstract of paper entitled "A Safe Method for Lighting the Working Faces of Coal Mines by Electricity," read before a meeting of the Vancouver Island Branch of the Canadian Institute of Mining and Metallurgy.

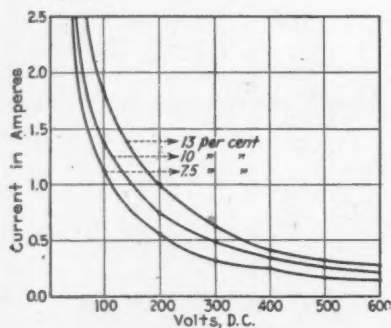


Fig. 1—Least Igniting Currents of Methane-Air Mixtures

This shows the smallest amperages of direct current that will ignite various percentage mixtures of methane and air at voltages up to 600. As might be expected small current volumes at high potential are as effective in igniting gas as much larger amperages at lower voltages.

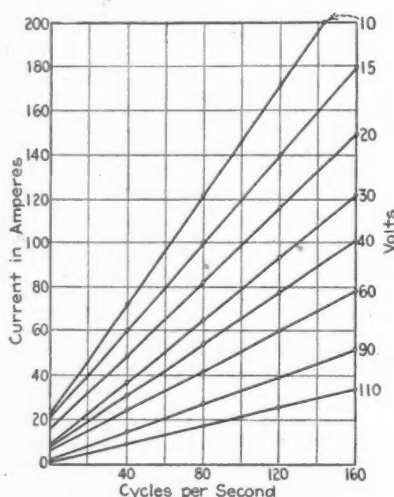


Fig. 2—Methane Ignition with Alternating Current

This reveals the high amperages that are necessary to ignite gas with current of low potential, also the increase in current volume necessary for ignition at high frequencies. With current of a given voltage the amperage necessary for ignition is almost directly proportional to the number of cycles per second.

and safer illumination at the face has been attacked from several angles. The most promising of these appears to be that suggested by Professor Thornton, who has carried out a series of experiments to demonstrate the advisability of employing for this purpose alternating currents of higher frequencies than are now used for power transmission. The standard frequencies now used at coal mines are 25 and 60 cycles per second. In the course of his experiments Professor Thornton has developed several graphs showing the ignition points of various mixtures of methane and air at given voltages and amperages of both direct and alternating current. Some of these are presented herewith. Figs. 1, 2 and 3 show the ignition points of methane and air at various voltages for direct and alternating currents, also the effect of raising and lower-

ing the frequencies of alternation upon the ignition point at a given potential. Fig. 4 shows the variation of time between maximum and minimum voltage of three frequencies of alternating currents.

It might be well at this point to call attention to the fact that an alternating current does not draw as long an arc for a given voltage and current value as does a direct current. Direct current is an electrical flow which does not vary in potential or polarity, while an alternating current is one that varies periodically at a predetermined rate from zero to maximum voltage in a positive direction, then descends to zero, passes to a negative direction, attains a maximum voltage and then ascends to zero again, commencing the cycle anew in a positive direction. The number of complete cycles per second establishes the frequency of the particular current under observation. When a direct current is broken from any cause, an arc is formed and as the voltage has a tendency to increase rather than diminish on most power lines at the moment of breaking, the arc tends to draw out rather than to cease sharply. Particularly is this the case on circuits using 200 volts or more.

As the arc is elongated the positive side of the circuit tends to heat rapidly thus aiding the prolongation. When an alternating-current circuit

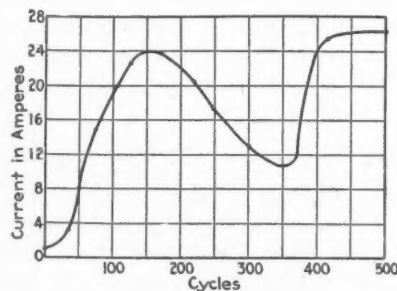


Fig. 3—Influence of Frequency on Ignition

This graph shows the effect of holding the potential constant at 200 volts but varying the frequency from 0 to 500 cycles per second. A pronounced hollow or low point occurs in this graph at a frequency of 350 cycles.

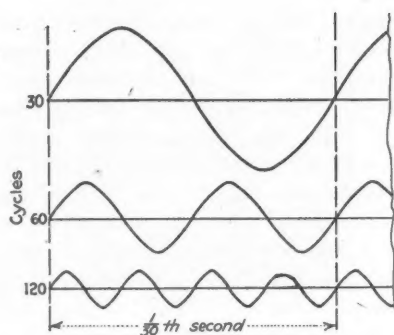


Fig. 4—Relation Between Cycles and Potential Changes

Direct current is a continuous flow in one direction at uniform potential. With alternating current the potential and consequently the direction of current flow changes direction twice during each cycle or the total number of reversals per second will be twice the number of cycles.

is broken the polarity of the ends of this circuit will vary with the frequency of the generator or source of energy supplying the current, and since the potential reaches zero and the polarity changes twice during each cycle it becomes evident why a shorter arc will be drawn than is the case with a direct current.

Company rules and state laws governing the use of electricity in coal mines allow its employment for signaling at potentials not exceeding 25 volts in either direct or alternating current, and the wires may be extended to the coal face. To obtain a source of adequate illumination it will only be necessary to use alternating current at a frequency of 150 cycles per second at 8 or 10 volts potential to energize lamps of any candle power that may be deemed sufficient by the operators.

EXPLAINS NECESSARY CURRENT VOLUME

An illustration of the current volume necessary to energize a 21 cp. 8-volt mazda lamp such as is used on automobiles might aid in understanding this point. A 21 cp. lamp burning one-half watt per candle power would require 10½ watts. This divided by 8 volts would equal 1¼ amp. Referring to Fig. 1, it is found that it would require a current of 200 amp. at a potential of 10 volts to ignite a mixture of air and methane. If choke coils were placed in the lamp circuit so as to limit its possible capacity to 10 amp. it will be seen that a safety factor of 2,000 per cent would be established for ignition by electric sparking.

If the generator were designed to supply ten 21-cp. lamps a choke coil might be placed in the main circuit or the self induction of the generator

could be so designed as to limit its output to 50 amp. which would afford a safety factor of 500 per cent. The voltage being low the insulation of the wiring could be of a nature that would be comparatively cheap such as a weatherproof and slow-burning covering, although some kinds of slow-burning insulation are liable to damage from acid water.

One detail in any scheme of this kind is highly important, namely, the lamp fixture. This should be so designed as to be capable of withstanding mechanical abuse, also of being easily placed in any convenient position. It has been suggested that the present miner's safety lamp be designed to hold two bulbs, one of which might be operated from the present type of storage battery, the other being energized by means of a length of flexible cord. This latter might well terminate in a plug connection, which could be plugged in to a source of high frequency current at convenient points. The objection to any method of this kind would be the necessity of the miner having to drag the connecting cord around with him as he moved from place to place.

DESCRIBES ANOTHER METHOD

Another, and probably a feasible method, would be to install a suitable generator in any convenient position, run the necessary wiring to such places as might be desired, as many plug outlets being placed in the circuit as might be necessary. From these points, extension cord with cab tire insulation could be run to lamp fixtures capable of being hung on a nail or stuck in the timbers as might prove most convenient. The miner could be supplied with his standard safety lamp to enable him to enter and leave the workings or move about outside his room, as occasion might demand.

The generator supplying current to such lamps would be of special design and could be arranged for either an air- or electric-motor drive, and could be placed a suitable distance from the face. Of course, steam engine drive could be used if this were desired. Such a generator could be designed to operate with permanent magnets so as to embody no moving conductors in its construction, thus eliminating collector rings, brushes and excitors. A combined motor-generator set designed to deliver 100 watts or 200 cp. of

Wooden Box Helps Advance Heading Rapidly

Advancing an entry at the rate of 709 ft. per month, by hand loading, is no easy task. This average was maintained for three consecutive months at the No. 2 mine of the Sudduth Fuel Co., at Huddy, Ky. The mine is in the Pond Creek seam, and the coal averages 51 in. in thickness. The main heading, the one advanced so rapidly, consists of three parallel entries. Driving had to be stopped every 300 ft. and a cross entry turned off on a 150-ft. radius curve.

Undercutting was done with a shortwall machine having a 7½-ft. cutterbar. Four, and sometimes five, cuts per entry, were made each 24 hr. Entries were driven 15 ft. wide and ventilation of the face was effected by a blower and wind pipe. An interesting feature was the use of a wooden box rather than canvas. This was made up in 16-ft. sections fitted with sleeve or muff joints. The sides were formed of four 1x12-in. boards, giving the box an inside cross-sectional area of 100 sq.in. The lumber used cost approximately \$40 per M., making the material cost for each section around \$2. T. H. Huddy, general manager of the company, states that for this work the wood boxing proved to be economical and highly satisfactory. The 16-ft. sections are easy to handle and require no hangers or supports, but are laid directly on the bottom.

lighting capacity would weigh about 100 lb. and therefore could be shifted easily from point to point as occasion might demand. Such units could be built with dustproof ball or roller bearings.

To sum up, it would appear that high frequency alternating current might be obtained by the use of a low cost motor-generator set. This could be built to energize 20- to 30-cp. lamps in mechanically strong fixtures capable of being placed in any desired position. Current could be either plugged in or connections made permanently as the operator might see fit. Such a current supply affords a method of mine illumination that is safe for both miner and operator, whether the danger of explosion or fire be from mixtures of air and methane or air and coal dust. The whole system would be free from costly installation and operation charges.

Book Reviews

Toured the States Checking Machine Loader

Convincing proof of the progress in mechanical loading in coal mines is furnished in "Bulletin 17, Coal Mining Investigations," published by the Carnegie Institute of Technology, Pittsburgh, Pa., which includes "Mechanical Loading in Coal Mines," by F. E. Cash, mining engineer, U. S. Bureau of Mines and E. H. Johnson, research fellow, Carnegie Institute of Technology. The speed with which this bulletin has been produced is one of its most valuable attributes, for, with a development which moves along as rapidly as mechanical loading of coal, the would-be authors who have hot-footed it round the country from Dan to Beersheba, or shall we say, from the Dodge Slope in Scranton, Pa., to the Sublet mine near Kemmerer, Wyo., find when they get back that to cover the ground satisfactorily they ought to be making another round.

It is interesting to note how complete this record is. The reader can get a good idea of about all that has been done in the United States. Not all the mines, it is true, have been visited that have mechanical loaders, but almost all kinds of devices have been covered. We note that the Paris Purity Coal Co.'s installation in Arkansas is omitted as is also the activities of the Montevallo Coal Co. in Alabama. The Phelps-Dodge Corporation, in Dawson, N. M., is not covered and at Sublet, Wyo., there are two kinds of conveyors now beside the one listed.

INSPECTION REVEALS VALUE

But what a valuable symposium this book is can only be judged by its inspection. It not only describes all the devices giving their heights, lengths, widths, gages, power required, gathering system, types of conveyors, propelling mechanism, speed and crew but in many cases it gives time studies and plans of the mine workings. It also publishes a cost analysis of operation with average loading machines of the portable car-loading type and with scrapers and conveyors in thin beds. Assuming a machine cost delivered of \$15,000 and machine labor at

\$8.14, \$4.00 and \$6.50 per day respectively, the cost of loading by a portable car loader is given as 40.3c., 27.0c. and 34.6c. respectively, making a saving over handloading costs of 39.7c., 8.0c. and 20.4c. respectively. Scraper equipment is recorded as costing \$5,100 delivered, and with machine labor at \$7.50, \$4.00 and \$5.50 per day the cost of loading is placed at 59.7c., 38.3c. and 48.2c. per ton respectively giving a respective saving of 40.3c., 11.7c. and 27.8c.

The industry is greatly indebted to F. E. Cash and E. H. Johnson, to the Advisory Board for the Co-operative Mining Courses of the Carnegie Institute of Technology and to the U. S. Bureau of Mines for the preparation of this little volume. It contains 113 pp., is 6x9 in. in size and sells for \$1.

Mainsprings of Men

Poincare, says a recent Parisian epigram, knows everything, everything, and understands nothing, but Briand knows nothing, nothing, and understands everything. Something, such as has been said of Briand, might be said of Whiting Williams, author of a recent book entitled "Mainsprings of Men." The reviewer has made no count, but if there are a half dozen figures in the book he will be surprised.

Mr. Williams has traveled far and wide and worked entirely incognito and unsuspected in all manner of industrial plants, including many coal mines, and in many countries. He knows the mind of the worker and can quote his very words. He can cause the reader to see the worker's point of view. Perhaps the reader could dispense with this book altogether if he could look into his own heart and impulses and judge of other men's "mainsprings" by his own. But that he cannot do without some intelligent explorer like Whiting Williams to show him the way.

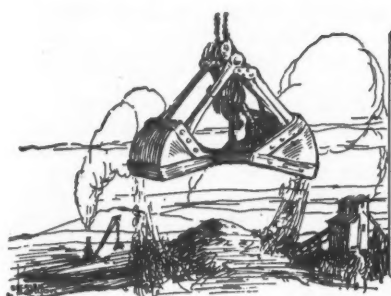
Mr. Williams' first chapter is on the immediate need of the laboring man for his pay envelope, a need so pressing that he is not interested in delayed bonuses, thrift and group insurance. These attract only the men who are better paid and are able for that reason to look ahead.

Then follow two chapters on working conditions and caste. Those capitalists who have worked their way up will recall that every time they rose, the honor of the better job was as large an item as the increased pay and that often the status, even without authority, of the job is so important as to make men seek it even at a decreased rate of remuneration. The undesirability of the job usually determines the class of men in it and so tends to make the caste distinction the more obvious. When the wage rate is changed relatively the caste alignment is revised, and dissatisfaction results. But danger and hard labor in a job is not a deterrent but rather a source of vainglory. The cry, "You ain't got 'guts' enough for this job" shows the attitude of the worker to this feature of his work.

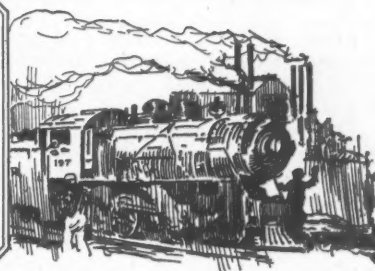
THE SUPERIORITY OF THE MINER

"In a Welsh coal town," says Mr. Williams, "the 'colliers' as they came down the street at the end of a shift were always grimmer than those who only helped those experts by shoveling, not coal, but mud or rock. So because the colliers were immediately more important than laborers, one way we had of showing our importance on the street was to get as black as possible. That, however, did not keep every coal worker in the town from figuring, along with all the other miners in Christendom, that he was superior to any ordinary factory hand because as a miner he was in the habit of taking a daily bath!"

The "Worker and His Organizer" and "The Worker and His Employer," "The Wish for Worth" and other like chapters follow. At the end of each chapter are "Problems" for solution based on the foregoing considerations; problems such as all employers must solve frequently, but they don't involve figures quite so much as principles. After all, wages are not the sole consideration in economic production; the will to work, the ability and readiness to co-operate are often as big a factor as the wage scale. Mutual regard in industry is as fateful as rates of pay. The worker's mind is more important than his body. How he thinks, what he thinks, why he thinks when he thinks is the subject of "Mainsprings of Men." The book has 311 pages, 5½x8½-in. and is published by Charles Scribner Sons, Fifth Ave., New York City. The price is \$1.50.



Production And the Market



Unwonted Holiday Activity Marks Coal Trade As Anthracite Peace Parley Drags

Tradition as well as such seasonal influences as the Christmas holiday lull and pre-inventory hesitancy have affected the coal market more or less during the last week, as in the corresponding period of years past. These influences have been offset to a certain extent, however, by the anthracite suspension, but most of all by the appearance of real winter weather over a broad expanse of territory—the first cold snap of any consequence thus far this season, reaching sub-zero levels in some localities. Domestic demand has picked up notably in response to the mercury's dip and steam consumers in many instances have discarded the waiting game and replenished waning stocks to be on the safe side.

Curtailment of production by reason of low running time during the last two weeks has had a strengthening tendency, but the heavy volume of output in previous weeks since October gave ample assurance that there would be no dearth of supplies. As a matter of fact "no bills" had become uncomfortably plentiful in many sections, and the cleaning up of tracks cluttered with unordered coal was a job of no mean proportions. The net result has been a firmer tone in prices without any markedly buoyant characteristics. As a rule, steadiness continues to be more marked in Eastern markets, the outstanding weak spot being New England, where steam grades have slumped again, despite the help of seasonable weather. As this is generally attributed to the belief that the end of the anthracite strike is near, there is a likelihood that consumers will soon begin to show more interest if negotiations tend to be prolonged.

As prospects for general business are considered favorable, industrial operations, car loadings and pig iron production being at high levels, and plenty of cold

weather is likely before the winter ends, the coal trade outlook is good.

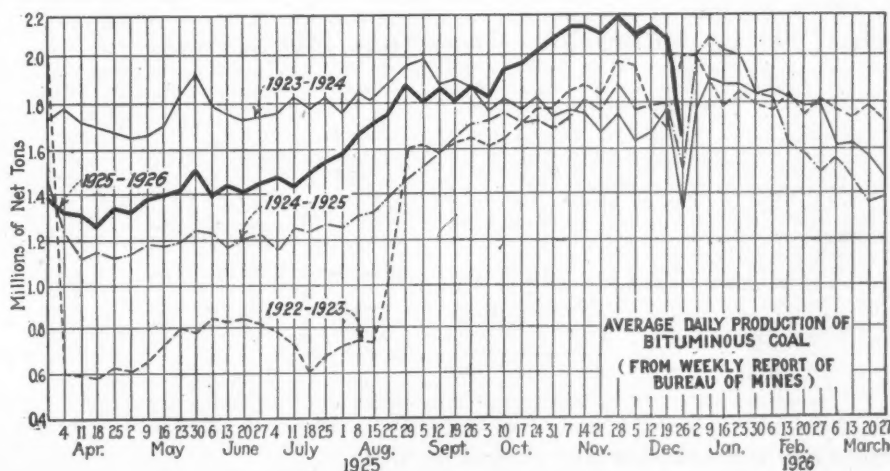
Belief that the anthracite difficulty was about to be settled caused a number of cancellations of orders for anthracite substitutes, but the appearance of cold weather and a realization that hard coal would not be flowing freely for quite awhile even if the strike was settled quickly—which is not at all certain—brought a flood of renewals, and at advanced prices in many instances. Coke continues to be most in demand as a substitute, and many in the trade are of the belief that it will hold many new customers when the strike ends.

Output in 1925 Over 500,000,000 Tons

Production of bituminous coal during the week ended Dec. 26 is estimated by the Bureau of Mines at 8,452,000 net tons, a decline of 4,237,000 tons from the total for the preceding week but 912,000 tons more than was produced in the corresponding week of last year. Total output for the calendar year 1925 to Dec. 26 is 514,827,000 net tons, compared with 473,208,000 tons in the same period of 1924. Anthracite production during the week ended Dec. 26 totaled about 32,000 net tons, as against 55,000 tons in the preceding week. Hard-coal output for the calendar year to Dec. 26 is about 62,119,000 net tons, compared with 89,320,000 tons up to the same date a year ago.

Coal Age Index of spot prices of bituminous coal stood on Jan. 4 at 181, the corresponding price being \$2.19, compared with 178 and \$2.16 on Dec. 28.

Dumpings of coal at Hampton Roads during the week ended Dec. 31 underwent the usual holiday slump, the total being 355,126 net tons, compared with 446,093 tons in the preceding week.



Estimates of Production

(Net Tons)

BITUMINOUS

	1924	1925
Dec. 12 (a).....	10,873,000	12,908,000
Dec. 19 (a).....	10,814,000	12,689,000
Dec. 26 (b).....	7,540,000	8,452,000
Daily average.....	1,508,000	1,690,000
Cal. yr. to date..... (c)	473,208,000	514,827,000
Daily av. to date.....	1,565,000	1,697,000

ANTHRACITE

Dec. 12.....	1,772,000	64,000
Dec. 19 (b).....	1,867,000	55,000
Dec. 26 (b).....	1,029,000	32,000

BEEHIVE COKE

Dec. 12 (a)	192,000	290,000
Dec. 19 (b)	218,000	313,000
Cal. yr. to date.....	(c) 9,275,000	10,258,000

(a) Revised since last report. (b) Subject to revision. (c) Minus two days' production to equalize number of days in the two years.

Midwest Demand Responds to Cold Snap

About a week of very cold weather has created a tremendous difference in the Midwest market. This has made itself felt in a brisk demand for all grades of coal and at better prices.

The domestic market was the first to be affected, as two or three days of below zero weather taxed the bins of retailers to the utmost and a lot of them saw their reserve piles dwindling at an alarming rate of speed; consequently they placed orders for renewed supplies and for immediate shipment. Those who were actually cleaned out of coal were paying a premium to the producers and wholesalers for car numbers. The demand for southern Illinois and central Illinois coals has been very good indeed. Most operators find themselves heavily booked on lump coal, comfortably supplied with orders for egg, and fairly well booked on their 3x2-in. small egg. In Indiana the condition is about the same.

West Virginia high volatile and eastern Kentucky coals moving into the Middle West are being absorbed rapidly, with additional orders being placed daily. Prices are firm to rising, and the market, generally speaking, is good. Smokeless coals from West Virginia have reacted some and prices have gone up a little, but they are a long way from the \$5 and \$6 levels they attained six or eight weeks ago when most of the smokeless coal was diverted to the East.

There is no great fuss about anthracite as those who have burned up their supply are now using either coke or smokeless, or a combination of both, and appear to be quite satisfied.

In the face of the tremendous tonnage of domestic coal that is being produced this week, it is remarkable that prices on steam coals have held firm. This is explained by the fact that a great deal of the extra steam coal is being used for heating purposes and it takes quite a lot of coal to heat large factories in zero weather. Operators anticipate that if the cold weather lasts another week or so steam coal prices will slip, but the buying public are placing orders heavily for future shipment on present price levels.

Demand for domestic sizes has been unusually good in the Cartersville field. Egg is in greater request than lump as a rule, but the nut sizes are slow and steam coal is heavy, which is unusual around the holidays. Railroad coal has been fair at the shaft mines, car supplies good, and working time from four to six days a week for the mines that are working. The strip mines have good working time; railroad tonnage shows improvement and prices seem to be better.

In the Duquoin and Jackson County field there is no change—the mines are working four to six days a week; railroad tonnage is light; no change in prices but the smaller sizes remain unbilled. In the Mount Olive field domestic has been moving well, but steam is slow; the only

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern		Market Quoted	Jan. 5, 1925	Dec. 21, 1925	Dec. 28, 1925	Jan. 4, 1926†
Smokeless lump.....	Columbus...		\$3.85	\$3.50	\$3.50	\$3.35@ \$3.75
Smokeless mine run.....	Columbus...		1.90	2.75	2.75	2.75@ 3.00
Smokeless screenings.....	Columbus...		1.10	2.60	2.60	2.50@ 2.75
Smokeless lump.....	Chicago...		3.75	3.10	3.35	3.75@ 4.25
Smokeless mine run.....	Chicago...		1.85	2.15	2.10	2.00@ 2.25
Smokeless lump.....	Cincinnati...		4.10	3.60	4.00	3.75@ 4.50
Smokeless mine run.....	Cincinnati...		2.10	2.35	2.55	2.50
Smokeless screenings.....	Cincinnati...		1.15	1.85	1.85	1.75@ 1.90
*Smokeless mine run.....	Boston...		4.10	5.00	5.00	4.50@ 4.75
Clearfield mine run.....	Boston...		1.95	2.00	1.90	1.75@ 2.25
Cambria mine run.....	Boston...		2.20	2.30	2.30	2.10@ 2.50
Somerset mine run.....	Boston...		2.05	2.10	2.05	1.85@ 2.35
Pool 1 (Navy Standard)...	New York...		2.80	2.95	2.95	2.75@ 3.15
Pool 1 (Navy Standard)...	Philadelphia...		2.75	2.95	2.95	2.80@ 3.10
Pool 1 (Navy Standard)...	Baltimore...		2.25	2.20	2.20	2.25@ 2.35
Pool 9 (Super. Low Vol.)...	New York...		2.05	2.30	2.30	2.15@ 2.45
Pool 9 (Super. Low Vol.)...	Philadelphia...		2.15	2.30	2.30	2.20@ 2.45
Pool 9 (Super. Low Vol.)...	Baltimore...		1.75	2.00	2.00	2.10@ 2.20
Pool 10 (H.Gr. Low Vol.)...	New York...		1.85	2.10	2.05	1.90@ 2.25
Pool 10 (H.Gr. Low Vol.)...	Philadelphia...		1.80	2.05	2.05	2.00@ 2.15
Pool 10 (H.Gr. Low Vol.)...	Baltimore...		1.60	1.90	1.90	1.90@ 2.00
Pool 11 (Low Vol.)...	New York...		1.60	1.75	1.75	1.65@ 1.90
Pool 11 (Low Vol.)...	Philadelphia...		1.55	1.90	1.90	1.85@ 2.00
Pool 11 (Low Vol.)...	Baltimore...		1.45	1.65	1.65	1.70@ 1.75
High-Volatile, Eastern		Market Quoted	Jan. 5, 1925	Dec. 21, 1925	Dec. 28, 1925	Jan. 4, 1926†
Pool 54-64 (Gas and St.)...	New York...		1.50	1.60	1.60	1.50@ 1.70
Pool 54-64 (Gas and St.)...	Philadelphia...		1.50	1.60	1.60	1.55@ 1.70
Pool 54-64 (Gas and St.)...	Baltimore...		1.55	1.65	1.65	1.65@ 1.70
Pittsburgh sc'd gas.....	Pittsburgh...		2.40	2.65	2.65	2.60@ 2.75
Pittsburgh gas mine run.....	Pittsburgh...		2.10	2.10	2.10	2.00@ 2.25
Pittsburgh mine run (St.)...	Pittsburgh...		1.85	2.05	2.05	2.00@ 2.10
Pittsburgh slack (Gas).....	Pittsburgh...		1.30	1.55	1.55	1.50@ 1.60
Kanawha lump.....	Columbus...		2.30	2.25	2.25	2.00@ 2.50
Kanawha mine run.....	Columbus...		1.55	1.70	1.70	1.55@ 1.85
Kanawha screenings.....	Columbus...		.95	1.20	1.20	1.10@ 1.25
W. Va. lump.....	Cincinnati...		2.25	2.75	2.35	2.50@ 3.00
W. Va. gas mine run.....	Cincinnati...		1.45	1.65	1.60	1.50@ 1.75
W. Va. steam mine run.....	Cincinnati...		1.35	1.55	1.55	1.50@ 1.75
W. Va. screenings.....	Cincinnati...		.85	1.15	1.10	1.00@ 1.25
Hoeking lump.....	Columbus...		2.50	2.35	2.35	2.25@ 2.50
Hoeking mine run.....	Columbus...		1.60	1.85	1.85	1.75@ 2.00
Hoeking screenings.....	Columbus...		1.05	1.25	1.25	1.20@ 1.30
Pitts. No. 8 lump.....	Cleveland...		2.40	2.35	2.35	1.90@ 2.75
Pitts. No. 8 mine run.....	Cleveland...		1.85	1.85	1.85	1.80@ 1.85
Pitts. No. 8 screenings.....	Cleveland...		1.50	1.45	1.55	1.45@ 1.65
Midwest		Market Quoted	Jan. 5, 1925	Dec. 21, 1925	Dec. 28, 1925	Jan. 4, 1926†
Franklin, Ill. lump.....	Chicago....		\$3.35	\$3.35	\$3.35	\$3.50
Franklin, Ill. mine run.....	Chicago....		2.35	2.50	2.50	2.35@ 2.65
Franklin, Ill. screenings.....	Chicago....		1.95	1.85	1.85	1.75@ 2.00
Central, Ill. lump.....	Chicago....		3.10	2.85	2.85	3.00@ 3.25
Central, Ill. mine run.....	Chicago....		2.20	2.30	2.30	2.25@ 2.35
Central, Ill. screenings.....	Chicago....		1.95	1.40	1.40	1.35@ 1.50
Ind. 4th Vein lump.....	Chicago....		3.35	3.00	3.00	2.75@ 3.25
Ind. 4th Vein mine run.....	Chicago....		2.35	2.30	2.30	2.25@ 2.35
Ind. 4th Vein screenings.....	Chicago....		1.85	1.85	1.85	1.75@ 2.00
Ind. 5th Vein lump.....	Chicago....		3.00	2.50	2.50	2.35@ 2.65
Ind. 5th Vein mine run.....	Chicago....		2.10	1.95	1.95	1.85@ 2.10
Ind. 5th Vein screenings.....	Chicago....		1.70	1.40	1.40	1.35@ 1.50
Mt. Olive lump.....	St. Louis...		3.00	2.85	2.85	2.75@ 3.00
Mt. Olive mine run.....	St. Louis...		2.35	2.00	2.00	2.00
Mt. Olive screenings.....	St. Louis...		1.80	1.75	1.75	1.75
Standard lump.....	St. Louis...		2.85	2.40	2.40	2.35@ 2.50
Standard mine run.....	St. Louis...		1.95	1.80	1.80	1.75@ 1.90
Standard screenings.....	St. Louis...		1.55	.85	.85	.75@ 1.00
West Ky. block.....	Louisville...		2.60	2.00	2.00	1.85@ 2.15
West Ky. mine run.....	Louisville...		1.55	1.35	1.35	1.25@ 1.50
West Ky. screenings.....	Louisville...		1.10	.95	1.00	.80@ 1.10
West Ky. block.....	Chicago....		2.60	2.00	2.00	2.00@ 2.50
West Ky. mine run.....	Chicago....		1.50	1.25	1.25	1.25@ 1.75
South and Southwest		Market Quoted	Jan. 5, 1925	Dec. 21, 1925	Dec. 28, 1925	Jan. 4, 1926†
Big Seam lump.....	Birmingham..		2.85	2.75	2.75	2.50@ 3.00
Big Seam mine run.....	Birmingham..		1.70	2.10	2.10	2.00@ 2.25
Big Seam (washed).....	Birmingham..		.85	2.30	2.30	2.10@ 2.50
S. E. Ky. block.....	Chicago....		2.50	3.10	3.00	3.00@ 3.25
S. E. Ky. mine run.....	Chicago....		1.50	2.15	1.85	1.75@ 2.00
S. E. Ky. block.....	Louisville...		2.50	3.00	2.85	2.75@ 3.25
S. E. Ky. mine run.....	Louisville...		1.35	1.60	1.60	1.40@ 1.75
S. E. Ky. screenings.....	Louisville...		.95	1.10	1.15	1.10@ 1.35
S. E. Ky. block.....	Cincinnati...		2.60	2.85	2.85	2.75@ 3.50
S. E. Ky. mine run.....	Cincinnati...		1.45	1.60	1.60	1.50@ 1.75
S. E. Ky. screenings.....	Cincinnati...		.90	1.15	1.10	.90@ 1.35
Kansas lump.....	Kansas City..		5.00	5.00	5.00	5.00
Kansas mine run.....	Kansas City..		3.50	3.10	3.10	3.00@ 3.25
Kansas screenings.....	Kansas City..		2.50	2.30	2.30	2.25@ 2.35

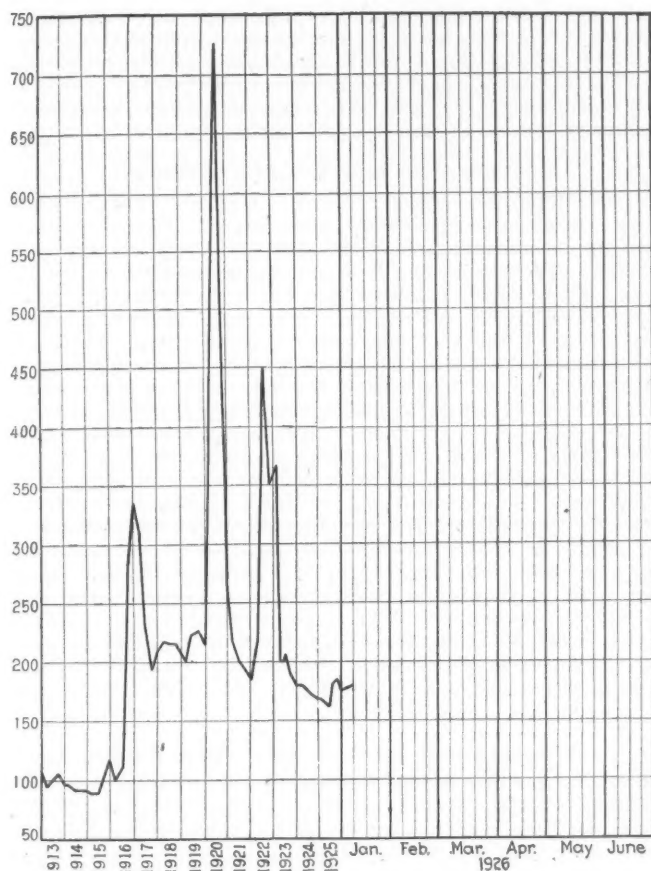
* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in heavy type; declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

		Market Quoted	Freight Rates	Jan. 5, 1925	Dec. 28, 1925	Jan. 4, 1926†
Broken.....	New York...		\$2.34	.....	\$8.00@ \$9.25	.....
Broken.....	Philadelphia...		2.39	.....	9.15	.....
Egg.....	New York...		2.34	\$8.50@ \$8.75	8.75@ 9.25	.....
Egg.....	Philadelphia...		2.39	9.45@ 9.75	8.80@ 9.25	.....
Egg.....	Chicago*		5.06	8.17@ 8.40	8.08	.....
Stove.....	New York...		2.34	9.75@ 10.25	9.00@ 9.50	.....
Stove.....	Philadelphia...		2.39	10.00@ 10.75	9.15@ 9.50	.....
Stove.....	Chicago*		5.06	8.80@ 9.00	8.53@ 8.65	.....
Chestnut.....	New York...		2.34	10.00@ 10.25	8.75@ 9.40	.....
Chestnut.....	Philadelphia...		2.39	10.00@ 10.75	9.25@ 9.40	.....
Chestnut.....	Chicago*		5.06	8.61@ 9.00	8.40@ 8.41	.....
Pea.....	New York...		2.22	4.50@ 5.50	5.50@ 6.00	.....
Pea.....	Philadelphia...		2.14	5.75@ 6.00	6.00	.....
Pea.....	Chicago*		4.79	5.36@ 5.75	5.36@ 5.95	.....
Buckwheat No. 1.....	New York...		2.22	2.10@ 2.50	3.00@ 3.15	.....
Buckwheat No. 1.....	Philadelphia...		2.14	2.50@ 3.00	3.00	.....
Rice.....	New York...		2.22	1.85@ 2.25	2.00@ 2.25	.....
Rice.....	Philadelphia...		2.14	2.00@ 2.25	2.25	.....
Barley.....	New York...		2.22	1.40@ 1.60	1.50	.....
Barley.....	Philadelphia...		2.14	1.50	1.50	.....
Birdseye.....	New York...		2.22	1.40@ 1.60	1.60	.....

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in italics.



Index	1926		1925	
	Jan. 4	Dec. 28	Dec. 21	Jan. 5
Weighted average price.....	181	178	179	172
	\$2.19	\$2.16	\$2.17	\$2.08

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke; 1913-1918," published by the Geological Survey and the War Industries Board.

thing that saved this field was railroad tonnage, which came in the last few days in the month quite heavily and cleaned up everything. The prevailing price on this coal for domestic sizes is \$2.75 both city and country.

In the Standard field there was an increase of about 10c. a ton for a day or two on domestic sizes and then they slipped back. At present there is a surplus of all other sizes than 6-in. lump and there is no unusual demand for this size. All mines are carrying "no bills." Railroad tonnage shows some improvement, there are plenty of cars and the mines are getting from three to five days per week.

Zero weather at St. Louis put the retail business on the map for a few days to finish up the year. All sizes moved, principally middle grade, and Standard is in fair demand. Orders for high grade have not been as numerous and there has been no unusual call for anthracite; smokeless showed some activity and coke is moving fairly well.

Country domestic business is unusually good on middle-grade coals. There is some activity in the country on coke. Country steam is fairly good and city steam in carloads is a little slow, but is expected to show improvement soon.

Wagonload steam is good and continues to show gains. No change in prices.

Tracks Cleared in Kentucky

In Kentucky there has been a heavy demand for car numbers, due to zero temperature, which brought about heavy demand for coal from retailers and for heavier firing for heating purposes.

With light production over the holidays in eastern Kentucky and strong demand for all sizes, coal on track has been in good movement and producers have been putting coal in transit more freely on prospect. Western Kentucky

took advantage of an opportunity to increase tonnage over the week. River coal has been shut out of the markets by heavy ice in the Ohio River.

Inventory work is nearly completed and improved demand for industrial coal is expected soon. Railroad consumption is heavy; utilities are consuming a lot of fuel and cement plants are working at full speed. Prices are no better on steam or small prepared sizes, but block coals are stronger by 25c. a ton or so in eastern Kentucky, and a trifle stronger in western. Except for special coals, eastern Kentucky prices are: Block, \$2.75@3.25; lump and egg, \$2@2.25; nut, \$1.75@2; mine-run, \$1.40@1.75; screenings, \$1.10@1.35. Western Kentucky block, \$1.85@2.15; lump and egg, \$1.75@2; nut, \$1.35@1.50; mine-run, \$1.25@1.50; screenings, 80c.@1.10.

Northwestern Trade Spurts

Coal dock operators at Duluth-Superior experienced a burst of activity last week as a result of a spell of sub-zero weather. Retailers were flooded with orders. The docks had comparatively moderate orders for prompt shipment but soon got batches of orders for later delivery.

December coal shipments are estimated at around 28,000 cars, compared with 27,411 cars in November and 29,615 cars in December last year. Increased movement is looked for in January as a result of the heavy accumulations of orders on dock operators' books and expectations that larger consumers and dealers will be in the market to replenish supplies that have been running low.

Cold weather and the knowledge that supplies on the docks are running low contributed to a rush for anthracite by domestic consumers late last week. From the present outlook stocks will be about cleaned up within three weeks. Supplies of bituminous coals on commercial docks are estimated at around 4,890,000 tons, so that no apprehensions are felt regarding the possibility of a shortage before spring. Quotations are unchanged for both anthracite and bituminous coals.

There has been no change whatever during the last week in the fuel situation in Milwaukee. Demand fluctuates with the mercury, and consumers are uncomplainingly facing the colder weeks of the winter now closely ahead. There is plenty of coke and Pocahontas and the better grades of bituminous coal, and there will be no hardship in this section except such as accompanies all wintry weather among the poor.

Arctic temperatures touching considerably below zero in the Twin Cities served to increase domestic and other heating-plant consumption of coal materially while it lasted. The severe weather endured but four or five days, but it did give a sudden increase to retail demand.

Steam coal demand has been better as long as the severe weather threatened to cut down deliveries as well as to augment demand. But supplies have been too good and the severe weather too short to do more than give passing help.

Southwest Trade Sensitive to Weather

The first zero weather of the season in the Southwest last week relieved the congestion of 234 "no-bill" cars on Kansas tracks, for the Southwestern market throughout the year has been unusually responsive to climatic changes. With the rising of the thermometer in the middle of the week orders again began to fall off and the surplus situation threatened to revert to its former condition. Arkansas, while not confronted with the surplus of Kansas, because a much smaller proportion of its mines are in operation, is having greater difficulty moving what it does produce, and many mines are working only two or three days a week.

During the past week there was a slight improvement in the Colorado domestic trade, which is attributed to the material change in the weather conditions. The increase is expected to continue, as the stocks on hand are getting very low, and it is not unlikely that if the cold weather continues the mines will be working to full capacity in order to supply the demand. Several operators are booked into the middle of January and are unable to take on any additional orders at this time.

There has been no change in the prices and in all probability present quotations will continue until April 1. There is ample labor supply and no interruptions from a transportation standpoint.

Demand for coal for heating purposes is quieter in Utah now than for years at this season. The weather has

been spring-like of late and consumers are buying only from hand to mouth. Domestic lump continues to be the most popular grade for residences. Industrial demand continues fairly steady with the metal industry and the railroads the best customers. The sugar manufacturing "campaign" is practically over and the sugar companies are no longer in the market for coal. Prices remain as firm as ever, and the labor situation is all that could be desired from the standpoint of the operator.

Cold Snap Lightens Holidays at Cincinnati

At Cincinnati cold weather that hit both ways served to enliven what otherwise would have been a dull season caused by the holidays. Already a fall in production has been shown through the American Railway Association's report for the Cincinnati district, where last week 12,044 cars passed from the south to the north side of the Ohio River, a decrease of 1,818 cars from the week previous, but 2,514 more than in the corresponding week of last year.

The anthracite conference also acted as a control to keep the market from running away with itself once the surplus and distress cars were cleaned up. Rises in price, it follows, were close to a semblance of normal. West Virginia high volatile lump advanced to \$2.75@\$. Southeastern Kentucky, which had been holding out for \$3 as its December price but which had dropped to \$2.75 and lower for block, recovered, and at this writing some wholesalers are asking \$3.25. Egg recovered to its first of the month range and all lines of mine-run went on the same basis, steam and gas being quoted \$1.50@\$. Inventory time, which always plays hob with the slack piles, caused a slight recession there.

In smokeless the advances made last week on nut, egg and lump were maintained. Mine-run is firm but screenings slid off 10c.@15c. Production both in the Pocahontas and New River fields, coupled with the domestic demand, has straightened things out for the low-volatile producers.

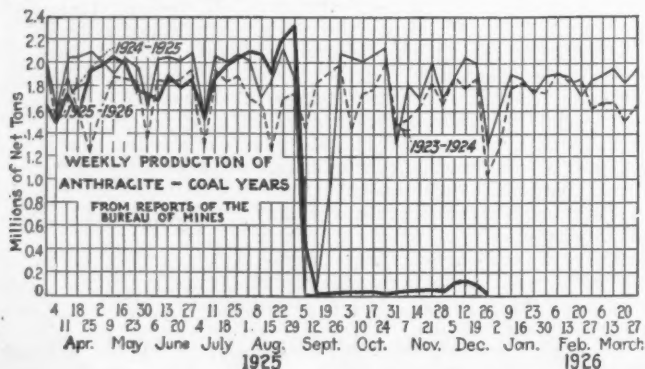
Zero weather froze the Ohio River on Dec. 27 and put a quietus to river movement. Retail business enters the year with practically the same price level that has been maintained for months. On smokeless lump quotations are \$9@\$. mine-run, \$6@\$. bituminous lump, \$6.25@\$. slack, \$4.50.

A drop in temperature has stimulated the domestic trade at Columbus to a marked extent. Dealers have cleaned up stocks to a large extent and distress coal has disappeared from the Columbus market, as well as from Detroit and Toledo, and better prices are obtained for the supply which is available. Retailers have been holding prices steady. Pocahontas users are now coming into the market better.

In the steam trade, buying is still for present needs as reserves are still good and large users are not disposed to increase them. One of the unexplained features is the weakness of screenings, which had been holding up fairly well. Practically no consignment steam grades are on the market and the usual mine prices are being obtained.

Output in the southern Ohio field is estimated at about 25 per cent of capacity, with the Pomeroy Bend field producing the lion's share. Preparations are being made to place additional mines in operation, however, and a better run is expected in January.

The only ripple in the eastern Ohio coal trade during the past week or so has been the increased activity of retailers due to the cold snap and heavy snowfall, which resulted in a rush of orders. However, prices have been in no wise affected so far as domestic grades are concerned, the tendency still being toward softening.



In the steam trade, inactivity has been the controlling feature during the holidays, due to many industrial plants being practically closed down or running such short time as to seriously curtail coal consumption. Spot prices on slack and nut-and-slack are 10c. lower than a week ago, and the market is slow to absorb the fuel being offered.

Depression Less Heavy at Pittsburgh

The Pittsburgh market shows a larger turnover, with more consumption and more production, but the relation between production and consumption is unfavorable to trading. There is a slight accumulation of steam coal on track. Demand for domestic coal has been much heavier in the past fortnight, but domestic coal is not a large enough proportion of the total business to make much difference in the general showing that the market is in poor shape. Prices are the same all along the line as formerly, except that while steam slack in general has been \$1.40@\$. Pan-handle slack is now strictly \$1.50, with slack from some other parts of the district readily obtainable at \$1.40.

The Buffalo bituminous trade is awaiting the possibilities of the next few days with much interest. That the resumption of anthracite mining is going to get the present trade to rights is shown by the fact that while Pocahontas egg now sells here for \$12 at the curb, dealers say that they hope to be able to hold that trade against anthracite by selling it for \$9. The regular bituminous shippers rather dread a return to mining, for it is expected to hurt that business more or less. Bituminous shippers declare that they are selling coal for exactly the same prices that it brought last summer.

New England Steam Trade Dips Again

Demand for steam coal has taken another slump in New England. While the weather has been more seasonable the trade has been much influenced by the impending anthracite settlement, and should negotiations be further protracted it is quite likely that the average consumer will be more interested than he professes to be today. For screened bituminous the inquiry from retail dealers is still reasonably good, but for run-of-mine there is only a scattering market.

At Hampton Roads there is perhaps less accumulation than a week ago, owing to the holidays, but spot prices are soft, even for the best grades. No. 1 Pocahontas and New River are quoted at \$4.75 down to \$4.50 per gross ton f.o.b. vessels, but most of the coal dumped is being applied on contract.

On cars Boston and Providence for inland delivery the smokeless coals range from \$6 per gross ton up to \$6.40@\$. \$6.50, depending upon the situation of the shipper and the tonnage involved. Consumers, especially the industrial users, know that the aggregate of steam coal above ground is relatively very large and they will not be stampeded for the present.

There continues moderate request for substitutes for anthracite. A considerable proportion of the householders in search of fuel are insisting upon something better than run-of-mine bituminous, and various kinds of coke as well as Welsh anthracite and Welsh ovoids, a form of briquet, apparently are in more favor. Steamer cargoes from Welsh and other ports are arriving day by day and, in all, the January arrivals are likely to be heavy.

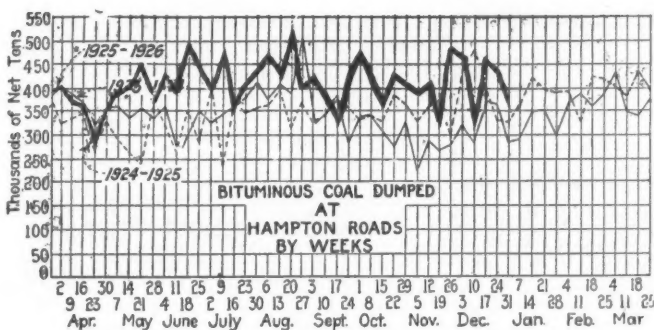
Prepared smokeless coal is being freely offered at \$4.25@\$. \$4.75 per net ton at the mines, while low volatiles from Pennsylvania, also in domestic sizes, are commanding \$5.25 @\$. \$5.55, owing to the through rate differential in their favor.

New York Trade Holds to Even Grade

Snow storms which interrupted mining and movement of soft coal in central Pennsylvania late last week did not interfere with receipts in the New York market to such an extent as to cause any uneasiness, but less coal was coming forward, some shippers receiving less than half their usual daily shipments. Mine-run movement sustained the local market, for, in addition to the industrial consumption, a fair volume is moving into residences and other buildings where anthracite formerly was used.

The taking of inventory did not appear to have as much effect on buying as in previous years when buyers usually held off until after New Year's Day.

The market for sized bituminous coal from central Pennsylvania is not particularly brisk, but a fair amount of New River and Pocahontas coals is coming into the market on the basis of \$4@\$. \$4.75.



At Philadelphia the bituminous market is still quiet, but there are signs of a pick-up. Concerns that suspended purchases on account of inventory are coming back for regular shipments, and this in conjunction with the drop in production due to the holidays has imparted a touch of firmness to the situation. Offsetting this is the possible end of the anthracite suspension. There has been a fair increase of steam buying by retailers who cater to steam trade, as they have exhausted their anthracite stocks, but even these buyers are quite cautious.

Contract customers are slow to come in for renewals, feeling that by waiting until the end of the anthracite troubles they may be able to close a better bargain. A good volume of rail fuel is moving, but with no special inquiries abroad. Tide movement continues ordinary, with only a couple of clearances recently.

The Baltimore soft-coal market, which had been gradually stiffening for a week, tightened up on prepared sizes with a bang when the cold spell swept the East last week. Quotations for low-volatile lump went up to \$4 a net ton; egg and nut were quoted variously from \$4.25 to \$4.50, and mine-run around \$2.25. Industrial coals also were in more brisk demand. Pool 71, quoted quite freely a week ago at \$2.15, was bringing generally around \$2.25@2.35, while good Pool 9 coals were generally quoted around \$2.15. There was little change in lower grade steam coals or gas coals, either for spot delivery or on contract. The export situation is simply one of absolute stoppage.

At Birmingham the slump in buying ordinarily following the Christmas holidays is not pronounced. Inquiries are good and new business is being booked right along for commercial coal. Consumers are not pressing deliveries as strongly as they were several weeks prior to the holidays and the volume of sales is not quite so large, but otherwise the status of the market is sound and the outlook promising. Bunker trade has suffered little if any setback, inquiry being good, but requirements are not being placed without some delay and effort.

Cold weather has given stimulus to the domestic market, and inquiry and booking have been good for the week. Some grades and sizes have been sold up several weeks ahead and demand has been sufficient to provide an outlet for current production of even the lower and medium qualities for the time being. There has been no change in quotations.

Coke is very active and there is a good market for all grades. Spot foundry is still holding at \$6@6.50; contract, six months and under, around \$5.75@6 per ton; gas coke, \$6@6.50. Egg is quoted \$5.25 and nut \$4.75@\$5 per ton ovens.

Peace Parley Causes Substitutes to Wobble

Failure of the anthracite operation and miners to iron out their differences last week caused much uneasiness and disappointment at New York. Optimism was rampant earlier in the week, as it was thought a settlement would be reached and that hard coal would soon be flowing into the market.

The market for substitutes, which had been active, became dull and wholesale dealers received many cancellations of orders, some of which had been placed at lower than current market prices. When the conference recessed without reaching any conclusion buyers who endeavored to reinstate cancelled orders found prices higher.

So positive were some wholesale dealers that a settlement would be reached that they discussed opening prices at the mines for independent coals.

With the exception of some No. 1 buckwheat held by speculators the wholesale market is cleaned up of anthra-

cite. Coal users are not without fuel, however. There are some domestic sizes of hard coal in retail yards and plenty of coke and soft coal, besides a fair volume of Welsh and German fuels.

As a substitute coke has the inside track and it is expected to continue to hold a part of its present clientele after the anthracite market becomes active. Byproduct coke is well sold up, nut sizes being held at around \$9.40 at the ovens, with beehive product fluctuating between \$7 and \$9.

The peace conference is exerting a strong influence upon the Philadelphia trade. Retailers, facing an active demand for fuel, do not know how to order substitutes to meet this demand, being fearful if the strike ends that they will have coke and bituminous coal on their hands. The cold wave created such a strong demand for fuel that the supplies of coke, the fuel in best demand, have been about cleaned up. Prices have jumped \$1 to \$2.50 a ton. What little coke is available is of the beehive variety, as all byproduct concerns are sold up for a couple of weeks.

There is a feeling in the Baltimore hard-coal trade that the end of the anthracite strike is approaching, but retailers are not encouraging customers in the belief that an adequate hard coal supply will be had within a month, even under most favorable conditions. It will take considerable time to get hard coal moving again and to restock yards here to a point where they can begin to supply anthracite demands. Soft coal is being pushed meantime, and the public is not only learning how to burn prepared sizes but is taking quite kindly to mine-run in many cases.

The trade at Buffalo is watching with increased interest for the outcome of the peace conference. Some of the wholesalers have run out of buckwheat anthracite and say they cannot get any more. It has been put up in price a little when sold by the independents, but the regular companies kept their old price to the end, selling it as low as \$6.85 at the curb. One concern is still delivering its byproduct coke to the curb for \$9.50, while others are charging \$12. Nobody knows what the coke people will do when anthracite again is in competition, so the trade is getting what it can out of it and the producer is taking it all.

Connellsville Coke Market Turns Calm

Since the top of the Connellsville coke market was reached during Christmas week the market was very quiet for about a week and prices began to yield rather sharply. Standard blast-furnace coke, run-of-oven, which had gone up to \$6, but with scarcely any turnover at that figure, is now, say, \$4.50@4.75. Prepared coke, which had gotten up to \$8 and more for some grades, is around \$5.50@6.50, but quite irregular.

There is no blast-furnace demand, as some blast furnaces bought prompt lots well before Christmas, to tide over any curtailment that might occur in shipments. Contracting was all done before the latest rise. There may be a few uncovered inquiries, but these would be chiefly among furnaces thinking of starting, and such furnaces can now wait a little while to get their coke at a fair price. One furnace, which had a contract with a byproduct plant through December, is reported to be banking.

The trade in Pittsburgh figures that even if the anthracite strike is settled soon the resumption of mining will take time and that there will be demand for Connellsville coke in the East for about a month after the settlement is signed. This coke, however, will have to go at a moderate price, say \$4 to \$5 or perhaps \$5.50 for prepared coke, according to quality.

The *Courier* reports coke production in the Connellsville and lower Connellsville regions in the week ended Dec. 26 at 95,800 tons by the furnace ovens, a decrease of 28,400 tons, and 95,290 tons by the merchant ovens, a decrease of 7,110 tons, making a total of 191,090 tons, a decrease of 35,510 tons.

Car Loadings, Surpluses and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Dec. 19, 1925.....	967,886	187,398
Previous week.....	1,008,824	191,884
Week ended Dec. 20, 1924.....	900,654	190,847
	Surplus Cars	
	All Cars	Coal Cars
Dec. 14, 1925.....	172,577	60,245
Dec. 7, 1925.....	159,897	54,277
Dec. 14, 1924.....	223,431	100,793
	Car Shortage	
	All Cars	Coal Cars
Dec. 14, 1925.....	.....	.....
Dec. 7, 1925.....	.....	.....
Dec. 14, 1924.....	.....	.....

Foreign Market And Export News

Stiffening of Tone in British Coal Market With Revival of Demand

Revival of demand for coal has placed the British market in a firm position. The low prices are stimulating fresh inquiries and steady bookings are now running well into the new year. Most collieries are fully sold for the next week, many being unable to accept further commitments. A number of pits are reopening on the strength of the subsidy and larger demand, though eighty-five large mines remain idle. The Swedish State Railways are inquiring for 30,000 tons of Admiralty large for January-March delivery. Employment is at the highest level since June. Monmouthshire coals are enjoying a good business and prices are a shade better. Coke holds steady on a fairly good home demand.

The Newcastle-on-Tyne coal trade continues to show a firm, quiet tone until well into January, but the sellers' firmness for sticking out for current quotations is rather checking actual business beyond. The chief inquiry for the past week has been for gas coals, and the major proportion of interest has been shown in such qualities. Steam coals have been rather erratic, becoming somewhat too plentiful for prompt movement at times, but on the whole maintaining a firm front. Coking coals and bunkers are quite firmly held, and the coke market is very much stronger, the falling off in values of a fortnight ago having been only a temporary phase. Patent and beehive sorts are very steady, but the firmest section is gas coke, which is in good demand for both export and home.

Production by British coal mines during the week ended Dec. 19, according to a special cable to *Coal Age*, totaled 5,555,000 gross tons, compared with an output of 5,430,000 tons in the preceding week.

Belgian Industrial Grades Dull

The situation of the Belgian coal market, particularly for industrial grades, is dull, even in the Liège district, where, however, there now is much industrial activity.

In domestic grades, anthracite coals, as well as nuts and small cobbles of half-bituminous, quarter-bituminous and

lean coals, remain scarce, but the other sized coals are much easier.

The joint wage commission will meet again in a few days to consider the recent 5 per cent increase of wages. Nearly all the collieries are opposed to this increase being maintained, as they deem it unjustified by present conditions in the trade. The slight increase in demand for Belgian coals noticed a few days ago was due to fears of a general strike of the Belgian miners. Meanwhile, competition is keen on the part of French, British, German and Dutch coals.

No change is reported in the situation of coke and briquets except that stocks are increasing again.

Market Listless and Weak At Hampton Roads

Business at Hampton Roads last week continued dull, with the market weak. Practically all mines serving this section shut down, to remain closed until Jan. 4, but it had little effect on the market.

The cold wave apparently did little to stimulate trade, and affected the railroads and those mines that were in operation only slightly. Shipping has been suffering somewhat from bad weather, and the bunker trade consequently has been light.

Strong Demand for All Grades In French Market

The French coal market remains satisfactory. A good volume of orders, for both industrial and house coals, was received by the mines of the Nord and Pas-de-Calais in December, but those for house coals are more pressing and available supplies are becoming scarcer.

Because of the increase in taxes (the advance of 50 per cent of the "royalty" tax alone will add 30,000,000 fr. per annum to the bill of costs of the French collieries), it is probable that prices will be raised as of Jan. 1, when higher rail transportation rates go into effect.

Depreciation of French currency compared with that of Great Britain and Belgium places French coals on such a low price level that there is a good export demand from Belgium, Switzerland and Italy. The Sarre coal field is getting its share of this business through an agreement with the mines of the Nord and Pas-de-Calais.

During November the O. H. S. received from the Ruhr 732,100 tons of indemnity fuel, including 491,100 tons of coal, 210,700 tons of coke, 30,300 tons of lignite briquets. During the past fourteen days of December the O.R.C.A. received from the Ruhr 113,448 tons of coke.

U. S. Fuel Exports in November

	1924	1925
Anthracite, gross tons....	282,217	31,246
Value.....	\$3,188,505	\$291,981
Bituminous, gross tons....	979,828	1,477,023
Value.....	\$4,607,624	\$6,408,430
Coke, gross tons.....	57,227	86,551
Value.....	\$442,140	\$797,238

ELEVEN MONTHS ENDED IN NOVEMBER

	1924	1925
Anthracite, gross tons....	3,266,463	2,833,264
Value.....	\$36,405,675	\$31,705,283
Bituminous, gross tons....	14,177,681	14,193,946
Value.....	\$65,841,614	\$62,328,978
Coke, gross tons.....	532,398	720,267
Value.....	\$4,452,114	\$5,681,929

Export Clearances, Week Ended Jan. 2, 1926

FROM HAMPTON ROADS

For Uruguay:	
Fr. Str. Leopold Ld. for Montevideo	6,020
For Brazil:	
Br. Str. Baluchistan, for Rio de Janeiro	5,773
For Dominican Republic:	
Dan. Str. Phoenix, for Macoris	240
Nor. Str. Elna E, for Macoris	242
For Cuba:	
Nor. Str. Cissy, for Cienfuegos	1,538
Br. Str. Maidenhead, for Felton and Daiquiri	6,904
Br. Str. Rexmore, for Havana	4,005
For Chile:	
Nor. Str. Hesperos, for Antofagasta	3,036

FROM PHILADELPHIA

For Martinique:	
Nor. Str. Kopolna, for Genipe Bay	—
For Cuba:	
Br. Str. Pacific, for Havana	—

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Dec. 24	Dec. 31
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week..	146,756	110,471
Virginian Piers, Sewalls Pt.:		
Tons dumped for week..	104,621	72,295
C. & O. Piers, Newport News:		
Tons dumped for week..	146,921	134,311

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Dec. 26	Jan. 2†
Pool 1, New York....	\$5.75@ \$6.00	\$5.75@ \$6.00
Pool 9, New York....	5.10@ 5.30	5.10@ 5.30
Pool 10, New York....	4.80@ 5.15	4.80@ 5.15
Pool 11, New York....	4.55@ 4.75	4.55@ 4.70
Pool 9, Philadelphia..	5.05@ 5.30	5.05@ 5.30
Pool 10, Philadelphia..	4.80@ 5.10	4.80@ 5.10
Pool 11, Philadelphia..	4.50@ 4.75	4.50@ 4.75
Pool 1, Hamp. Roads.	4.75@ 4.85	4.60@ 4.75
Pool 2, Hamp. Roads.	4.50@ 4.60	4.20@ 4.30
Pools 5-6-7, Hamp. Rds.	4.30@ 4.40	4.00@ 4.15

BUNKERS

Pool 1, New York....	\$6.00@ \$6.25	\$6.00@ \$6.25
Pool 9, New York....	5.35@ 5.55	5.35@ 5.55
Pool 10, New York....	5.05@ 5.40	5.05@ 5.40
Pool 11, New York....	4.80@ 5.00	4.80@ 4.95
Pool 9, Philadelphia..	5.30@ 5.55	5.30@ 5.55
Pool 10, Philadelphia..	5.10@ 5.35	5.10@ 5.35
Pool 11, Philadelphia..	4.75@ 5.00	4.75@ 5.00
Pool 1, Hamp. Roads.	4.85	4.75
Pool 2, Hamp. Roads.	4.60	4.30
Pools 5-6-7, Hamp. Rds.	4.30@ 4.40	4.15

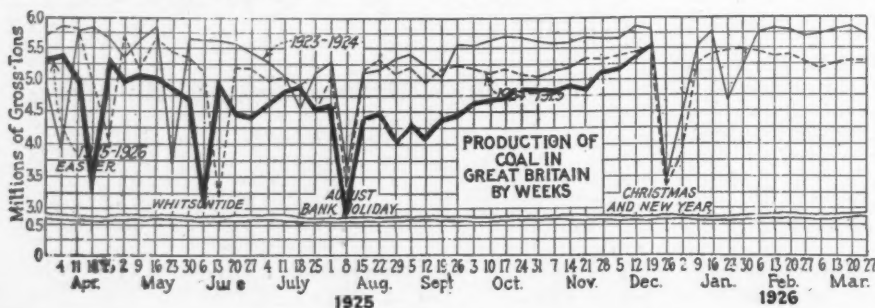
Current Quotations British Coal f.o.b. Port, Gross Tons

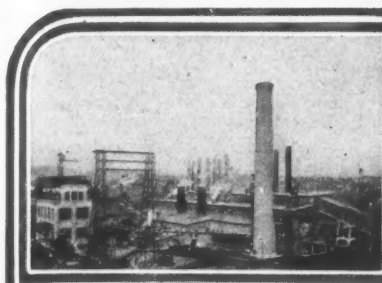
Quotations by Cable to *Coal Age*

	Dec. 26	Jan. 2†
Cardiff:		
Admiralty, large....	22s.6d. @ 23s.6d.	23s. @ 23s.6d.
Steam smalls.....	13s.6d.	13s.6d.

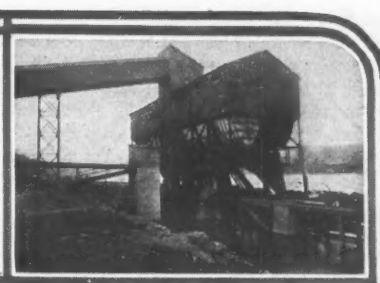
	Dec. 26	Jan. 2†
Newcastle:		
Best steams.....	15s.3d. @ 18s.	18s.
Best gas.....	16s.6d.	16s.6d.
Best bunkers.....	15s.6d. @ 16s.6d.	16s. @ 17s.

†Advances over previous week shown in heavy type; declines in italics.





News Items From Field and Trade



ALABAMA

Major developments which will have a marked effect on coal production during 1926 include the Crockard No. 5 Mine of the Woodward Iron Co., near Mulga, a shaft opening which is being driven 500 ft. into a large virgin field of Pratt coal. This mine is being developed with a view of being the largest source of fuel supply for the Woodward company. The Yolande Coal & Coke Co. will have its Connellsville Mine, in Tuscaloosa County, in operation soon. This operation has been rehabilitated at a cost of about \$300,000 after being idle about fifteen years. The Black Diamond Coal Mining Co. is building a washery and other plant facilities at Johns, in the Blue Creek field, and will be producing coal there from an old development at an early date. The seven drift openings being developed by Moss & McCormack in Fayette County will be producing coal for shipment during the early part of the year, as will also the new slope of the Brookside-Pratt Mining Co. at its Warrior River plant.

COLORADO

At a meeting of the board of directors of the Colorado Fuel & Iron Co. at Denver, Dec. 30, J. B. Marks was elected vice-president in charge of sales, traffic and purchases. Mr. Marks will continue his present duties as assistant to the president.

ILLINOIS

A. N. Poli, operator of the Greenfield Coal Co., of Greenfield, for the past four years, has sold his lease and improvements to Joseph Dubinick and James O'Brien of Virden. Mr. Poli has accepted a position as Superintendent of the mining department of the Carrollton Clay Corporation, of Carrollton.

INDIANA

Five non-union miners were kidnapped from the Buckskin Mines of the Bosse Coal Co., near Evansville, Jan. 2 by a crowd of nearly 300 men, officials of the mine were informed. John Lenn, mine superintendent, said he did not know where the men had been taken. The mine has been closed eighteen months as the result of a wage disagreement, Lenn said. The men who reported for work were to make repairs preparatory to reopening the shaft.

The Indiana Coke & Gas Co., Terre Haute, has plans under way for the construction of additions to its gas

works, including a new byproduct plant for the production of sulphate of ammonia, estimated to cost close to \$100,000 with machinery. A new battery of coke ovens and auxiliary equipment will be installed at a cost approximating \$400,000.

KENTUCKY

Representative Robson, of Kentucky, recently introduced a bill in Congress to establish a mine rescue station at Pineville, in the heart of the southeastern Kentucky coal fields, where there has long been need of such service.

G. M. Shoemaker, formerly in the operating department of the Harlan Coal Co., Louisville, stationed at the mines, is now sales manager at the main office at Louisville.

C. D. Glass, head of the Pacific Coal Mining Co., western Kentucky, has moved his office from Louisville to the mines, near Central City, as he spends practically all his time at the mines.

At Madisonville, the West Kentucky Coal Co. and its subsidiary the Kentucky Block Coal Co., which filed joint suits against the Grapevine Coal Co., for \$159,000, for coal alleged to have been removed from properties of the companies by the Grapevine concern, have reached an agreement. Settlement was made out of court and the case dismissed.

It was reported from Maysville, late in December that the coal towing boat "J. H. Donald," valued at \$80,000 was burned to the water's edge at Ripley, near Maysville.

Emmett O'Neal, head of the Emmett O'Neal Coal Co. and the Process Fuel Co., Louisville, recently was elected vice-president of the Bankers Bond Co., Louisville, a concern which handles insured bonds. O'Neal in November was defeated by a small majority for the office of sheriff of Jefferson County.

Frank D. Rash, former president of the St. Bernard Mining Co. and later vice-president of the West Kentucky Coal Co., has been elected president of the Inland Waterways Co., Louisville, and the Frankfort Elevator Co., and will have charge of their river boats, barges, etc., and development of traffic, terminals, etc. The company handles coal, iron, oil and other products on the Ohio River from Pittsburgh to Louisville principally, as well as below. Mr. Rash is a graduate of the Massachusetts Institute of Technology, coal operator, served a year as head of the American Legion, Kentucky division,

and is president of the Western Kentucky Coal Operators' Association, the operators refusing his resignation a short time ago, when he felt that a man who had left the coal trade shouldn't hold the office.

R. R. Webster has returned to Weeksbury and is again chief electrician and master mechanic of the Kentucky operations of the Elkhorn Piney Coal Mining Co. He resigned a position with the Dupont Engineering Co., at the new nitrogen-fixation plant near Charleston, W. Va., to go back to mining work.

More coal has been found in the Parksville community and a company, known as the Parksville Coal Co., with about twenty members, has been formed to develop the product. The latest coal found is a 3-ft. seam discovered on the Allnut place, near the L. & N. R.R. The coal is first class and is being used. The property of W. S. Aldridge contains a 6-ft. seam and it is believed much coal is in the knobs around Parksville. J. Adams of Parksville organized the company to make further investigations and mine the coal if a sufficient quantity is found.

MASSACHUSETTS

The Boston & Maine R.R. is about to build a plant capable of transferring 6,000 tons of coal in an 8-hr. shift from vessels to cars at its Mystic wharf in Boston. The cost will be about \$450,000. The yard will have storage capacity for 150,000 tons of coal.

OHIO

An inquest held on Dec. 28 absolved the Cambria Collieries Co. from all blame for the fire in the company's Webb mine which resulted in the death of nine miners. The cause of the fire was not determined, according to an announcement by Coroner Clyde Hardesty, of Bellaire, and State Mine Inspector Jerome Watson.

Bids received Dec. 23 by the Columbus Board of Purchase for 15,000 tons of Hocking nut, pea and slack for the Municipal Light plant, were as follows: Hamilton Coal Co., Columbus, \$1.25; Hatton, Brown & Co., Inc., Columbus, \$1.25; Jay Miller Coal Co., Columbus, \$1.25; W. S. Harman Coal Co., Columbus, \$1.28, all f.o.b. mines. For 8,500 tons of Hocking nut, pea and slack for the Scioto River Pumping Station, the bids were: Hamilton Coal Co., \$1.25; Hatton, Brown & Co., Inc., \$1.25; Jay Miller Coal Co., \$1.25. For 3,000 tons

of Hocking nut, pea and slack for the garbage disposal plant: Hamilton Coal Co., \$1.25; Hatton, Brown & Co., \$1.25; Jay Miller Coal Co., \$1.25; W. S. Harman Coal Co., \$1.28. For 600 tons of West Virginia nut, pea and slack: Hatton, Brown & Co., \$1.25; W. S. Harman Coal Co., \$1.25.

The Stalter-Essex Coal Co. is planning an increase in production from Mine No. 5, in the Pomeroy Bend field, which really is a double tippie serving former mines No. 1 and No. 5. When the tippie was burned eight months ago the company decided to erect a double tippie to serve the two properties. Mine No. 7 also is being operated to capacity, total production from the two mines being 1,800 tons daily. By Feb. 1 this will be increased to 2,200 tons daily. The mines are operated on the 1917 scale basis and little trouble of consequence since the burning of the tipples has occurred in that region.

A meeting of the stockholders of the Hazelton Coal Co., which has a mine at Long Run, in the Hocking Valley section, has been called for Jan. 30 for the purpose of dissolving the corporation. The mine has been completely worked out and the property will be abandoned.

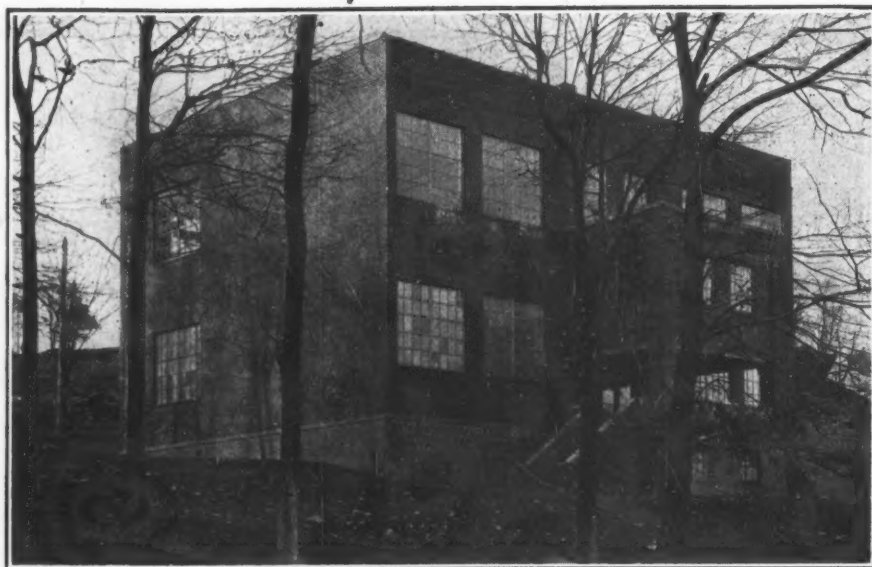
Mine managers, superintendents and others in the production end of the seventeen mines controlled by the Southern Coal & Coke Co., in southeastern Kentucky and northeastern Tennessee mingled with the sales and directing forces in a two day "round-up" held Dec. 28-29 in Cincinnati. E. L. Mahan, president, and John Callahan, general manager, were the chief speakers at meetings that were held for better preparation, better production and better selling methods. The annual dinner was the social event which took place on Monday evening.

After ten years spent in Cincinnati representing his father's company, the Hutchinson Coal Co., and his own project the Central Fuel Co., B. Lee Hutchinson has moved to Chicago, where he will be located as general Western sales manager for the West Virginia Coal & Coke Co. Mr. Hutchinson and his brother Brooks were the moving spirits last year in the consolidation of their interests the Main Island Creek Coal Co. and other properties into the old line corporation, the West Virginia Coal & Coke Co.

S. R. Jennings, whose properties played a large part in the consolidation recently effected by S. Bascom Slomp of a \$9,750,000 company under a Virginia charter, was in Cincinnati recently and said that the general sales offices would be continued there under the direction of W. S. Denham, who has been marketing the Jennings product for several years from offices in the Dixie Terminal Building.

PENNSYLVANIA

Frozen rivers in the Pittsburgh district in the severe cold spell last week caused much inconvenience to consumers of coal and coke, who are de-



A Modern Educational Building in West Virginia

This high school building at Glen White, W. Va., is an example of the progressive development by the E. E. White Coal Co. This building has all the advantages of the modern city school and it also has an abundance of light and fresh air.

pendent on this method of transportation. Fuel was being diverted to the railroads, and one large company was forced to go into the open market and purchase a lot of coke as a result.

Effective Jan. 1, James T. Garbine, coal freight agent of the Pennsylvania R.R. at Philadelphia, became coal freight traffic manager at Pittsburgh, succeeding H. G. Clevenger, who died recently. Carter H. Lippincott, coal freight agent at Pittsburgh, was made coal freight agent at Philadelphia, and Samuel A. Lattimer, chief clerk to the coal traffic manager at Pittsburgh, was appointed coal freight agent at Pittsburgh.

A reward of \$5,000 for the recovery of the \$48,000 payroll loot obtained by bandits when they held up messengers and guards at mine No. 3 of the Pittsburgh Terminal Coal Corporation at Mollenauer, near Pittsburgh, Dec. 24, has been offered by the company. Isaiah L. Gump, an employee of the company, was slain by the bandits in the holdup.

According to figures compiled by the State Forestry Department the Pittsburgh Terminal Coal Corp. during the first nine months of 1925 mined 2,923,000 tons of coal and used 8,812,804 board feet of lumber. The largest single item was posts, of which 738,000 were used or 6,500,000 board feet. Mine ties were the next largest item, 1,660,000 board feet being used during the nine-month period. Other items were caps, 285,000 ft.; railroad ties, 60,310 ft.; brattice, 77,000 ft. The use of wooden mine rails was discontinued Sept. 1, but up to that time 230,000 board feet was used for this purpose. In the mines of the Clearfield Bituminous Coal Corp. it is estimated, 4.5 board feet of lumber was required for each ton of coal mined.

The Corrado Coal & Coke Co., of Connellsville is putting into operation more plants as a result of the increas-

ing demand for coke. The works at Adelaide are the latest to be put in operation with 100 ovens burning, the coal being shipped from the Vanderbilt mine. The Clarissa mines are furnishing coal for 150 ovens at the Clarissa works, near Vanderbilt. Fort Hill has 40 ovens running. Vanderbilt and Shamrock are furnishing the coal for Fort Hill.

During the Christmas holiday period State Treasurer Samuel S. Lewis came to the aid of the financial institutions of the anthracite and the bituminous regions of Pennsylvania by depositing in them \$5,000,000 of state funds. The money was placed in the regular depositories of the Commonwealth and the coal regions were chosen, he said, because of conditions there owing to the strike in the hard-coal counties and continued subnormal conditions in the soft-coal section.

WEST VIRGINIA

Coal production in the 12½ counties of northern West Virginia in 1925 is estimated at 25,604,740 net tons, according to compilations by George S. Brackett, head of the Brackett Statistical Organization. The coal production in the region is the heaviest since 1923, when 27,758,050 net tons was mined. In 1924 the output was 19,909,000 net tons.

The work of rock-dusting Rachel mine of the Bertha-Consumers Co. at Downs, near Fairmont, was completed recently, according to E. Frank Miller, general superintendent.

The Bingamon bridge of the Western Maryland Ry., which had two shoes of the structure blown out by nitroglycerine Dec. 23, has been repaired and transportation has been resumed.

A new coal loading record for the Fairmont region was made recently by Paul Dobeles, a 37-year-old French miner, at the Dakota mine of the Bethlehem Mines Corporation. He

mined 538 tons, or an average of 45 tons a day, in a 12-day period. His biggest day totaled 51 tons in eight hours, which was in addition to drilling the necessary holes for the coal shooters to do their work. Some time ago a negro miner loaded 400 tons in 12 days.

The Smoke Eaters' Society, composed of 225 men, who have been baptized by smoke of mine fires, subjected to noxious and poisonous gases following explosions in which effort was made to rescue entombed miners, and adepts of the self-contained breathing apparatus, will meet in Morgantown next June. The Smoke Eaters were organized at the Leisenring (Pa.) plant of the H. C. Frick Coke Co. 18 months ago, and now has veteran mine-rescue men of several states banded together.

For the first time the men employed in the state's industries excelled those employed in the coal mines this year, according to a recent survey. The report shows that 100,000 men were at work in the coal mines of the state this year as compared with 113,814 men in the industries of the state.

Fairmont region ranked fifth among the lake-coal shipping fields in the country during the 1925 season up to Nov. 1, according to figures of the Ore & Coal Exchange of Cleveland. The region shipped 1,173,352 net tons. The Kanawha, Logan, Kenova-Thacker field led with 8,286,113 tons shipped and eastern Kentucky was second with 5,766,838 tons; the Pocahontas-New River third with 3,029,616 tons and Pittsburgh (Pa.) fourth with 1,923,591 tons. The No. 8 Ohio fields were sixth with 1,122,981 tons. Mines in the Panhandle section shipped 713,420 tons up to Nov. 1. The Fairmont total includes the tonnage on both the Baltimore & Ohio and Monongahela railroads.

An analysis of smokeless production for the month of October brings to light the fact that at the end of ten months of 1925 production was 5,799,230 tons in excess of shipments for the corresponding period of 1924. It had reached a total of 37,518,307 tons, making it certain that the output for the entire year would be approximately 44,000,000 tons. This will be 6,000,000 tons in excess of last year's production. The increase in October alone was 430,051 tons over that for October, 1924.

Probably 50 per cent of the Dakota mine of the Bethlehem Mines Corporation was rock-dusted up to the early part of last week, according to N. A. Emslie, division superintendent. Four coats of rock dust will be applied. The rock-dusting is done at night in order to hasten the work and not interfere with the usual mining activities.

O. W. Evans, general manager of the Lynchburg Coal & Coke Co. and the Eureka Coal & Coke Co., operating in the Pocahontas district, succeeded W. A. Wilson as general superintendent of the fuel mines of the Norfolk & Western Ry. Co., Jan. 1. Mr. Wilson recently moved to Florida. Mr. Evans will have general charge of the Howard Collieries at Chattahoochee, Pond Creek Colliery, at South Williamson and Vul-

can Colliery at Vulcan. All of these mines are being operated by the railway company as a source of fuel supply and ship approximately one million tons of coal per year.

Work on the electrification of the Virginian Ry. from Elmore, to Roanoke, Va., 134 miles, will be resumed. The line was completed as far as Princeton, a distance of 36 miles, when Gibbs & Hill, the contracting company, was ordered to suspend operations temporarily. When the project is completed eastern coal shipments will be brought to Roanoke for classification and weighing instead of to Princeton, as is now the case. Operation of electric locomotives between Elmore and Princeton began Sept. 21.

The will of the late Dr. C. B. Lee, of Glen Jean, head of several coal companies in the Loop Creek section of Fayette County, which has been probated in the county clerk's office, disposes of an estate amounting to about half a million dollars.

W. H. Green, of the W. H. Green Coal Co. which completed the mining of coal at Adrian, last summer, has purchased the plant of the Greenmar Coal Co. at Strader on the Charleston division of the Baltimore & Ohio R.R. Mr. Green will operate the mine as an individual as soon as the lease can be transferred. H. B. Martin, president of the Greenmar company, will for the time being retire from active mining operations and devote his entire time to the coal brokerage business. Mr. Green at one time was interested in the Greenmar company.

All employees and officials of the E. E. White Coal Co. attended a farewell banquet at Glen White, Dec. 29, to E. E. White, the retiring president. The affair was not only a tribute to the retiring president but also was a welcoming to the new owners of the property, the Massachusetts Gas Co., of Boston.

After investigating the \$40,000 fire which destroyed the tipple of the West Virginia-Pittsburgh Coal Co. near Wellsburgh, deputy fire marshals and state police say that the fire was of incendiary origin. Lon Scott, who had been discharged by the company several days prior to the fire, is being held by the authorities. The company is rebuilding the tipple.

The Detroit Mining Co. is loading coal at its mine on the Little Coal River branch of the Chesapeake & Ohio Ry., after several months of preparation. The Detroit Mining Co. is a subsidiary of the Essex Mining Co. which about six months ago began operating its mines in the Pomeroy field on a non-union basis. Interests in control of the Essex and the Detroit companies heretofore have operated only in the Pomeroy and Hocking fields of Ohio. The Detroit company has 3,200 acres of coal in one block in the Little Coal River section. This coal is in the Winifrede vein and is 5½ ft. thick. As the seam is 500 ft. up the mountain a button conveyor is employed. The mine is electrically equipped for cutting and haulage. Automatic mine doors have been installed and loading machines

will be used. Next spring the company plans to open another mine in this vicinity. R. T. West will be general superintendent at the mines in southern West Virginia as well as over those in Ohio.

Five union miners are in jail at Philippi, awaiting trial on the charge of having violated an injunction issued to eight coal companies of the Bear Valley mining region by Judge Warren B. Kittle of Barbour County. It was alleged the men trespassed on coal company premises and "dogged" non-union workmen. The injunction order was issued to the Brown Coal Co., Blocky Pittsburgh Coal Co., Cambria Coal Co., Greer Gas Coal Co., Tressler Coal Co., Bear Valley Coal Co. and the Bear Mountain Coal Co., all of which are operating on a non-union basis.

WYOMING

M. O. Carlson, who has been superintendent of the Blazon Coal Co. at Blazon during the past year, has been transferred to Rains, Utah, to serve in similar capacity at that point, being succeeded by James Hackett, who has been working in the Rock Springs district of late. Mr. Hackett, who took over the superintendency at Blazon, is well known in the local district, having been employed by the Kemmerer Coal Co. for several years.

CANADA

A communication received by the Ontario government from Sir Henry Thornton, president of the Canadian National Rys., states that within two weeks from Dec. 29 the remainder of the Alberta coal which the railway agreed to haul to Ontario would be moved. The original agreement was to transport 25,000 tons. Some 18,000 tons of this allotment had been delivered when the movement was stopped to make way for the grain shipment.

Importation of bituminous coal into Canada continued to rise in October, amounting to 1,347,965 gross tons which was the largest in any month since March, 1924. Imports of anthracite decreased still further, and the quantity imported in the month was only 149,371 tons. The decrease was, however, in importation from the United States, shipments from Great Britain increased and amounted to almost 60 per cent of the month's total.

Production of coke in Canada during November totaled 156,182 tons, a decrease of 3 per cent as compared with the October output of 161,414 tons. Coke produced in the Eastern provinces rose to 60,089 tons from the 56,714 tons produced in October, the output of the Western provinces of 19,220 tons was about the same as in October, while the Ontario production of 76,873 showed a drop of 10 per cent. The consumption of Canadian coal for coke-making remained about the same as in the preceding month at 84,190 tons, but imported coal had declined to 153,033 tons from 163,660 tons in October. Producers of pig iron being the principal users of coke, a decline of 7 per cent in pig iron production in November led to a drop in the coke output,

McGraw-Hill Company Buys Keystone Catalogs

The McGraw-Hill Co., Inc., has bought the Keystone Consolidated Publishing Co., of Pittsburgh, Pa., and thereby acquires the *Keystone Mining Catalog*, the *Coal Catalog*, the mining and quarrying directories and the list services published and conducted by the Keystone company.

There is thus brought into one organization the outstanding publishing interests serving the mining field—the McGraw-Hill Co., with its magazines, *Coal Age* and *Engineering and Mining Journal-Press*, and the Keystone company with its catalogs, directories and lists. *Coal Age* and *Engineering and Mining Journal-Press* have served the mining industries for more than two generations and the purchase of the Keystone property will enable them to broaden and intensify that service and assist, even more than in the past, in the solution of the problems of these industries. At the same time there is offered to the manufacturers who make the machinery, tools and supplies with which the industry does its work, a co-ordinated advertising service, consisting of educational and creative advertising in the magazines, efficient catalog distribution through the Keystone catalogs and direct-by-mail effort through the list service.

The Keystone catalogs, published annually, are condensed and consolidated catalogs of manufacturers selling to the mining and quarrying fields and give in convenient form the essential

facts regarding the machinery and supplies made by these manufacturers. There are two editions, one for coal mining, the other for the metallic and non-metallic mining and quarrying fields. Both editions, besides the condensed manufacturers' catalogs, contain extensive information regarding mining and quarrying methods and serve as handbooks of mining and quarrying practice.

The *Coal Catalog* is a handbook of the coal seams and coal mines of the country, giving the geology of the seams, the analysis and characteristics of the coal taken from them, and the advertisements of companies mining and selling coal. It forms an indispensable guide to economy in buying coal for fuel or processing purposes.

The Keystone company also publishes directories of the mining and quarrying fields and furnishes a list-addressing service for mailing circulars and other advertising matter for manufacturers.

The catalogs in no sense replace or interfere with the educational function of *Coal Age* and *Engineering and Mining Journal-Press*. Each volume furnishes the mining man in convenient form, information that would otherwise have to be sought in a file of individual manufacturers' catalogs, inconvenient to keep and seldom complete. The Keystone catalogs, by bringing the essential data together in condensed form and thoroughly indexed make it instantly available.

That the Keystone service has been sound is attested by the growth and present size of the catalogs. The coal mining edition, in its last issue, con-

tains 1,204 pages; the metal-quarry edition, 928 pages; the *Coal Catalog*, 1,293 pages. All of the volumes are of 9 x 12-in. page size.

From the standpoint of the manufacturer selling to the mining fields, the concentration of *Coal Age*, *Engineering and Mining Journal-Press*, the Keystone catalogs, the Keystone directories and the list service under one management offers the opportunity to obtain from one organization a complete promotion and publicity plan, embracing educational and creative advertising, through the advertising pages of *Coal Age* and *Engineering and Mining Journal-Press*, reference advertising through the Keystone catalogs, and direct-by-mail list service through mailing lists kept up-to-date week by week and rendered highly efficient through the manifold and direct sources of information of the magazines and catalogs. Such list sources could not, on account of the high cost, be duplicated by the manufacturer. These lists, which must be obtained by McGraw-Hill for its magazines and for the Keystone directories, and must be kept up currently, will now be available to manufacturers for their circular mail work at a cost negligible compared with the cost of compiling and maintaining their own lists.

Joseph J. Vigneau, the founder of the Keystone company and until now its president, will continue in charge of the Keystone business for the McGraw-Hill Co. with offices in Pittsburgh, while Ralph C. Becker, hitherto vice-president of the Keystone company, will continue in charge of sales with headquarters in New York. Except for the retirement of Edward B. Day, New York representative, who leaves to devote his entire time to his company, the Hydro-tator Co. of New York, there will be no changes in the staff of the Keystone organization, but the service of the organization will be augmented by all the editorial and advertising resources and strength of the McGraw-Hill Co. All communications should continue to be addressed to the Keystone Consolidated Publishing Co., 800 Penn Ave., Pittsburgh, Pa.

CANADA

(Continued from page 33)

but this was partly offset by increased demands for domestic use. Imports of coke in November declined to 81,609 tons from 94,213 tons in October, while exports fell 1 per cent to 2,432 tons. The apparent consumption was 235,359 tons, as compared with 251,475 tons in October.

A mass meeting of coal miners at Glace Bay, N. S., adopted a resolution, moved by Attorney General John C. Douglass of Nova Scotia, to the effect that the provincial government petition the federal administration for the purpose of obtaining a Canadian National Rys. coal contract for the British Empire Steel Corp., as a means of alleviating unemployment in collieries Nos. 2 and 4 in the Glace Bay area.

Obituary

M. S. Kemmerer, for many years head of the coal firm of Whitney & Kemmerer and widely known in the industry as a pioneer in the hard-coal producing field and the owner of important coal properties in Virginia, Wyoming and Colorado, died at Atlantic City, N. J., Dec. 29 at the age of 82. The firm of Whitney, McCreery & Kemmerer was organized in 1871, the name being changed to Whitney & Kemmerer when George McCreery retired on being elected City Treasurer of Philadelphia. Mr. Kemmerer became head of the firm about 20 years ago, when W. B. Whitney died. At first his interest was exclusively in hard coal, but he soon branched out and his interests spread to Virginia, Wyoming and Colorado, as well as to central and western Pennsylvania. He was one of the pioneers

in the industry in Wyoming, the mining town of Kemmerer having been named after him.

Robert Drummond, M.P.P., 86, of Stellarton, N. S., died recently. He was regarded as an authority on coal mining in Nova Scotia and for many years was proprietor and editor of the *Maritime Mining Record*, published at Stellarton.

Edward J. Nied, prominent in the coal industry in Cambria and Somerset Counties, Pennsylvania, died at the home of his brother-in-law, Wilson W. Shaver, in Johnstown, Pa., on Dec. 26, aged 58 years. Mr. Nied was born in Danville, Pa. He came to Somerset County in 1897 as private secretary of Simon Krebs, pioneer coal operator, who established a coal mine at Listie. This was the first mine to be opened in Somerset County in the low-vein coal. Mr. Nied remained at Listie until 1904, when the Krebs operations were sold to the Somerset Coal Co., which later was merged with the Consolidation Coal Co. In 1904 Mr. Nied removed to Somerset and had charge of the payroll department of the Consolidation Coal Co., until 1913, when he was transferred to Jenkins, Ky., where he was superintendent of supplies. His health failed about a year ago.

Douglass B. Dunsmore, 77, a mine superintendent in central Pennsylvania for many years, died at the home of his son, James Dunsmore, in Portage, Cambria County, Dec. 30. He was a member of a family which was closely associated with the development of the coal industry in Pennsylvania. His health failed following an injury he sustained a year ago.

William Henry Sanford, prominent banker and coal operator and a director of the Cosgrove-Meehan Coal Co., of Johnstown, Pa., and Illinois, died in Philadelphia on Dec. 24, aged 74. Mr. Sanford was born in England, and was brought to America when an infant by his parents, who settled in Phillipsburg, Pa. When he grew to manhood he became cashier of the old Moshannon Bank. Thirty years ago he went to Patton, Cambria County, where he organized the First National Bank, with which he had been affiliated during the remainder of his life.

Traffic

Adjust Rates on Burlington

The Chicago, Burlington & Quincy R.R. will place in effect Jan. 12 a new schedule of rates on coal shipments from various Illinois coal fields to Burlington, Fort Madison and Keokuk, Iowa, as well as to points in that general vicinity. It had been shown to the Interstate Commerce Commission that freight rates to Burlington and adjacent points had been higher than to Galesburg, Aurora, Joliet and other industrial cities in Illinois.

Cut Coke Rate on N. Y. Central

The New York Public Service Commission has approved new rates of the New York Central (West) on coke, coke breeze, coke dust and coke screenings, from Buffalo and East Buffalo to Falconer and to Fredonia, \$1.39 per net ton. This is a reduction and becomes effective Jan. 22, 1926.

Coming Meetings

Engineering Council. Annual meeting Jan. 13-15, at Washington, D. C.

The Engineers Society of Northeastern Pennsylvania. Annual banquet at Hotel Sterling, Wilkes-Barre, Pa., 6:30 p.m. Thursday, Jan. 21. Secretary, T. F. McKenna, Scranton, Pa.

Hazard Coal Operators' Exchange. Annual meeting Jan. 22, at Lexington, Ky. Secretary, J. E. Johnson, Lexington, Ky.

American Wood Preservers' Association. Annual meeting, Jan. 26-28, 1926, at Cleveland, Ohio. Secretary, E. J. Stocking, Chicago, Ill.

Coal Club of Philadelphia. Annual meeting, Jan. 28, 1926, at the Bellevue-Stratford Hotel, Philadelphia, Pa. Secretary, C. K. Scull, Philadelphia, Pa.

Northeast Kentucky Coal Association. Annual meeting, Jan. 28, 1926, at Ventura Hotel, Ashland, Ky. Secretary, C. J. Neekamp, Ashland, Ky.

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

New Companies

The Powhatan Mining Co., Beechwood, Ohio, has been incorporated with a capital of 500 shares of stock, no par value designated, to mine and sell coal. Incorporators are: C. N. Fiscus, M. E. Balcom, H. M. Bruening, M. K. Appleby and J. Q. T. Ford.

The S. Doyel Coal Co., Henryetta, Okla., with a capital of \$20,000, has been incorporated by M. A. Doyel and Hugh Kerr.

The Sandlick Coal Co., Whitesburg, Ky., capital \$140,000, has been chartered by W. M. Pursifull, P. G. Gorman and James P. Lewis. The same general interests have operated other companies in the section and are well-known operators, Pursifull and Gorman having been in the section for years.

Among the new coal companies organized in West Virginia in October were the following: Queen Coal Co., of St. Albans, with a capital stock of \$10,000; Hager Coal Co., of Logan, \$75,000; Samples Coal Co., of Thurmond, \$5,000; Elkland Mining Co., of Elkhurst, \$50,000; Paul Logan Coal Co., of Huntington, \$100,000; Superior Central Mining Co., of Charleston, \$500,000 and Packs Smokeless Fuel Co., of Charleston, whose capital consists of 1,000 shares of no par value.

The Midland Number Four Mining Co. has been organized at Cass, Ind., with a capital stock of \$75,000 to do a general mining and prospecting business. Of the capital stock one-third is common and the other preferred. The incorporators are Nelson Houpt, Bert Houpt and Lex Usrey.

The Captina Coal Co., of Bellaire, Ohio, has been incorporated with a capital of \$20,000 to operate a mining business. The incorporators are J. F. O'Connor, Mary E. O'Connor, Thomas Long, Slater Long and M. L. Davis.

Trade Literature

The Rome Wire Co., Rome, N. Y., recently issued the third in its series of catalogs dealing with wire. This last one is on **Bare Wire** and contains useful data and tables regarding constructions, sizes, weights, current-carrying capacities, etc. The first two catalogs dealt with **Magnet Wire** and **Super Service Cord**.

Automatic Switching Equipment. General Electric Co., Schenectady, N. Y. Bulletin No. GEA-295. Pp. 23; 8 x 10 1/2 in.; illustrated. Describes the application of this service to mining and industrial service, railway service, hydro-electric generators, central station service, etc.

New Equipment

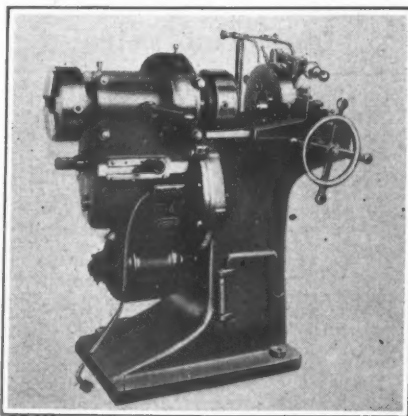
Self-Contained Threader Can Be Made Portable

In order to meet the demand for a pipe and bolt threader that can be used either as a portable or production machine, the Chicago Pipe Threading Machinery Co., of Racine, Wis., has perfected and placed on the market the machine shown in the accompanying illustration. This is capable of threading pipe from 1/4 in. to 2 in. in diameter or bolts from 1/4 in. to 1 1/2 in. By the addition of a universal drive shaft it may be fitted to drive hand stocks of any size up to and including 12 in. in diameter.

Although this machine is designed to meet all the requirements of one for portable use it is also a production and precision threader. The motor driving it through direct gear connection is protected from all oil and chips as well as from the work being handled. An extension cord is provided, fitted with a plug that will fit any light socket, so that power may be drawn from any convenient point. Three speeds, which well cover the range of the machine, are obtained by means of sliding gears operated by a conveniently placed lever. A clutch for starting and stopping the machine is located on the spindle and gives perfect control without reference to the motor or gears.

At the rear of the die head is placed the extra heavy cut-off attachment. All sliding parts are carefully machined and gibbed to compensate wear. Absence of vibration in this particular part saves many knives and other parts from breakage. The reaming tool is mounted on the cut-off block and is operated by turning the handle toward the center of the machine after the cut has been made. This is accomplished without changing the location of the die head.

In general design this machine is



Side View of Semi-Portable Machine

This combined pipe and bolt threader represents a more or less radical departure from conventional design. It is a self-contained unit that may be mounted on wheels for ready transportation over short distances. The pedestal base contains both an oil reservoir and a tool cabinet where dies, wrenches and the like may be stored.

modern in every particular, yet presents a more or less radical departure from conventional practice. The pedestal base is fitted with both an oil reservoir and a tool cabinet where dies, wrenches and the like can be stored. The entire machine may be mounted on wheels when it is desired to use it as a portable unit.

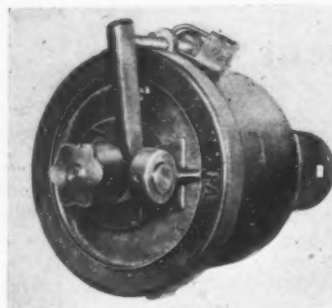
Charles Rasmussen and R. T. Ingalls, owners of the Wisconsin Machinery Co. of Racine, Wis., together with L. H. Taylor, formerly of the Greenfield Tap & Die Co., of Greenfield, Mass., and the Williams Tool Corp., of Erie, Pa., and Clifford Peterson of the Clifford Peterson Tool Co., of Chicago, are the incorporators and owners of the company manufacturing this new machine.

Triple Inclosed Fuse Keeps Locomotive in Operation

Adaptability to practice is the keynote in the design of a three-point, permissible fuse recently introduced by the Mancha Storage Battery Locomotive Co., of St. Louis, Mo. This fuse insures continuity of operation of a locomotive or power truck in a gaseous mine. Safety dictates that no current-carrying part shall be exposed in a gaseous portion of a mine. Formerly, when a fuse was blown, the locomotive had to be hauled to the bottom before it could be replaced. Equipped with this new device, the locomotive is instantly restored to service by simply operating a lever. A new fuse is thus placed in the circuit, while a third fuse is still in reserve. The blown fuse may be renewed when the locomotive reaches the barn. In addition to the continuous service which this device effects, it injects a further element of safety into storage battery locomotive operation. The fuse lever is located convenient to the motorman and may be thrown as a switch should the controller stick or an accident be imminent.

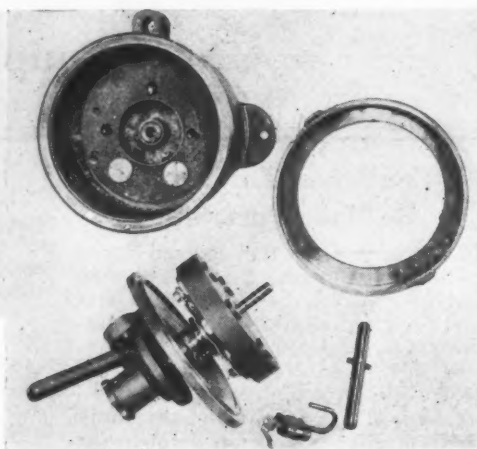
This three-point fuse has been approved by the Bureau of Mines and is standard equipment on all permissible locomotives and power trucks furnished by its manufacturer. The housing consists of three parts. First, there is a cylindrical shell of cast bronze, the upper face of which is accurately machined. The end of this shell is also threaded, the cover consisting of a cast bronze plate with raised faces on each side at the circumference. These faces are also machined, one to fit flush with the end of the shell, and the other to fit a similar face on the inside of the retainer ring. This latter is of cast bronze and is threaded inside. When it is in place, the housing presents a rugged exterior and forms an absolutely flame proof unit.

Two asbestos packed stuffing boxes in the bottom of the shell permit the leads to reach the terminal posts mounted on a fibre block. On this block are also located two laminated



Fuses Easily Changed

In case of a burnout fuses may be changed without opening the case. To accomplish this it is merely necessary to properly manipulate the lever and knob.



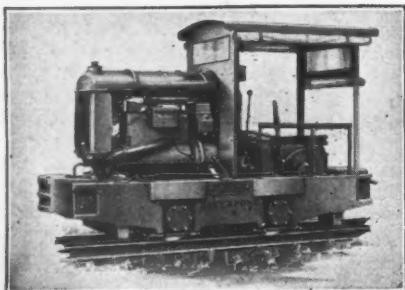
copper contacts, 90 deg. from each other. The working parts are carried on a stem which extends through a bushing in the cover and is supported at its lower end by a bushing forming an integral part of the shell casting. This stem carries a round, fibre block, on the top of which the fuse links are mounted. Four solid copper contacts placed at 90 deg. from each other protrude from its under side. These contacts are in series with one another through the three fuse links. The absence of the fourth link prevents a continuous circuit. In other words, when the external lever which operates the stem is in the closed position, only two adjacent solid contacts make connection with the two permanent, laminated contacts. There is, therefore, but one fuse in the circuit, the others being on

open ends. The shift from one fuse to another is made by simply releasing the lever, which allows the stem to be withdrawn a short distance, next turning the stem through 90 deg. by means of the knob on the outside of the housing, and then closing the circuit again by throwing the lever. By means of a spring, opening of the circuit becomes instantaneous. This is highly desirable for breaking the circuit without drawing an arc, in case the device is used as a switch. The housing and all working parts on the inside are substantially lined and bushed with several thicknesses of mica so as to avoid all possibility of short circuits. Burned out fuses may be replaced in a moment's time, the only tool necessary to the accomplishment of this operation being a small wrench.

New 4-Ton "Gas" Locomotive Has Fordson Power Plant

A new 4-ton gasoline locomotive incorporating the Fordson engine and transmission parts recently was announced by the Davenport Locomotive Works, Davenport, Iowa. The dependability of the Fordson power plant with the advantages of using highly standardized engine and transmission parts for quick replacement and repair, help to fit this locomotive for all-around service in outdoor mine-track yards.

The design of the locomotive is simple, parts are accessible and the rugged, balanced construction found in the larger Davenports has been duplicated. The design is flexible allowing



Good for Outdoor Service

This new 4-ton gasoline locomotive using a Fordson engine, starts on gasoline runs on kerosene and is rugged enough for hard work.

the use of a canopy cab, a fully inclosed steel cab, or the removal of the cab altogether. The operating levers are placed within easy reach at the right hand side of the cab and clear vision is provided in all directions.

The locomotive has a speed range of 3 to 14 m.p.h. and a maximum tractive power of 2,125 lb. Its operation is highly economical for it starts on gasoline and runs on kerosene.

Industrial Notes

The Link-Belt Co., of Chicago, announces the opening of a branch office in the First Wisconsin National Bank Bldg., Milwaukee, Wis., with R. C. Kendall in charge.

The electrical supply business carried on by the Western Electric Co. has been set apart from the telephone manufacturing business and incorporated under the name of Graybar Electric Co., with capital stock of \$15,000,000, all owned by the Western Electric Co. This gives to the supply department a separate identity which is made necessary by its importance as the largest merchandiser of electrical apparatus and related equipment in the world. Since it came into existence in 1869 as the partnership of Gray & Barton, the name which it now resumes in modified form, the supply business has grown steadily until it now serves more than 35,000 customers through fifty-five distributing houses in important cities. Albert Lincoln Salt is president of the new company.

The Lapeer Trailer Corporation, manufacturers of automatic semi-trailers, announces the appointment of J. B. Beattie as Eastern sales manager, with headquarters in New York City. Mr. Beattie formerly was connected with the Autocar Co.

Association Activities

Directors of the Cincinnati Coal Exchange on Dec. 22 elected the following officers to serve for 1926: President, Nolan Mahan, General Coal Co.; Vice-President, John Glaser, Midland Coal Sales Co.; Secretary, Armour A. Sizer, Flat Top Fuel Co.; Treasurer, William Heitzman, Central Pocahontas Coal Co.

T. K. Maher, president of the Maher Collieries Co., (chairman), J. L. Good, of the National Coal Co., and Joseph Nelms, of the Ohio & Pennsylvania Coal Co., are members of a committee appointed by the Pittsburgh Vein Operators' Association of Ohio on trade extension. It is said that newspaper advertising will be used to help move Ohio coal.

Freight rates, recent court rulings and Interstate Commerce Commission decisions were freely discussed at the December meeting of directors of the Central Pennsylvania Coal Producers' Association, held in the headquarters in Altoona Dec. 15. The meeting was in charge of the president, B. M. Clark, of Indiana, the others present including M. J. Bracken, Rembrandt Peale, Sr.; J. W. Searles, C. Law Watkins, William Lamont, E. W. Robertson, S. J. Willis, J. R. Caseley, H. B. Scott, J. William Wetter, Rembrandt Peale, Jr., C. B. Maxwell, James McCook, A. M. Liveright, of Clearfield, solicitor for the association; Charles O'Neill, secretary, and W. A. Jones, statistician. Representatives of the National Coal Association also attended. Harry L. Gandy, executive secretary of the National Coal Association, gave much valuable information relative to the industry throughout the country and strongly appealed to the association to renew its membership in the national association. This matter was taken under advisement and a committee composed of B. M. Clark, Rembrandt Peale and Secretary Charles O'Neill was appointed to make a canvass of the members and make a report at the January meeting.

Recent Patents

Mine Car; 1,555,982. Warren V. Johnson, Bloomsburg, Pa., assignor to American Car & Foundry Co., New York City. Oct. 6, 1925. Filed Aug. 8, 1923; serial No. 656,372.

Flotation Machine; 1,556,083. Arthur C. Daman, Denver, Colo. Oct. 6, 1925. Filed Oct. 18, 1923; serial No. 669,326.

Steel Mine Car; 1,556,140. James B. Wolf, Glen Ridge, N. J., assignor to American Car & Foundry Co., New York City. Oct. 6, 1925. Filed Jan. 24, 1925; serial No. 4,515.

Pivoted Bucket Conveyor; 1,556,343. William E. Phillips, Cleveland, Ohio, assignor to The Stearns Conveyor Co., Cleveland, Ohio. Oct. 6, 1925. Filed Aug. 29, 1921; serial No. 496,318.

Safety Catch for Mine Gates; 1,556,690. Gustave E. Huttie, Scottsdale, Pa. Oct. 13, 1925. Filed Feb. 29, 1924; serial No. 696,074.

Method for Dusting Coal Mines; 1,556,879. William J. Reid, Wattis, Utah. Oct. 13, 1925. Filed July 3, 1924; serial No. 724,014.

Fuel Briquet and Process of Making; 1,557,320. John F. O'Donnell, Morris Run, Pa. Oct. 13, 1925. Filed April 12, 1924; serial No. 706,172.

Two-Way Tramcar Skip-Hoist Apparatus; 1,557,965. Robert H. Beaumont, Radnor, Pa., assignor to R. H. Beaumont Co., Philadelphia, Pa. Oct. 20, 1925. Filed May 9, 1925; serial No. 29,059.

Automatic Skip-Loading Gate; 1,558,121. George N. Simpson, Chicago, Ill. Oct. 20, 1925. Filed June 25, 1924; serial No. 722,291.

Conveyor; 1,558,550. Joseph E. Joy, Franklin, Pa., assignor to Joy Machine Co., Pittsburgh, Pa. Oct. 27, 1925. Filed April 15, 1925; serial No. 706,656.

Fuel Pulverizing Apparatus; 1,558,663. John E. Bell, Brooklyn, N. Y., and Henry Kreisinger, Pittsburgh, Pa., assignors to the Combustion Engineering Corp., New York City. Oct. 27, 1925. Filed Sept. 16, 1922; serial No. 588,532.

Safety Device for Hoists; 1,558,955. Clarence R. Welch, Denver, Colo. Oct. 27, 1925. Filed May 10, 1924; serial No. 712,497.

Mine Drilling Machine; 1,559,175. Isaiah S. Marshall, Des Moines, Iowa. Oct. 27, 1925. Filed Jan. 21, 1925; serial No. 3,744.